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James Sowerby, John T. Boswell

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ENGLISH BOTANY.

ENGLISH BOTANY;

OR,

COLOURED FIGURES

OF

BRITISH PLANTS.

EDITED BY JOHN T. BOSWELL SYME, F.L.S. ETC.
LECTURER ON BOTANY AT WESTMINSTER HOSPITAL.

THE POPULAR PORTION BY MRS. LANKESTER,
AUTHOR OF "WILD FLOWERS WORTH NOTICE," "THE BRITISH FERNS," ETC.

THE FIGURES BY
J. SOWERBY, F.L.S., J. DE C. SOWERBY, F.L.S., J. W. SALTER, A.L.S., F.G.S.
AND
JOHN EDWARD SOWERBY,
ILLUSTRATOR OF THE "FERNS OF GREAT BRITAIN," "GRASSES OF GREAT BRITAIN,"
"WILD FLOWERS WORTH NOTICE," ETC. ETC.

Third Edition.

ENLARGED, RE-ARRANGED ACCORDING TO THE NATURAL ORDERS,
AND ENTIRELY REVISED.
WITH DESCRIPTIONS OF ALL THE SPECIES BY THE EDITOR.

VOLUME I.

RANUNCULACEÆ TO CRUCIFERÆ.

LONDON:
ROBERT HARDWICKE, 192, PICCADILLY.
1863.

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PREFACE.

THE appearance of the first number of a Third Edition of "English Botany" calls for a few remarks upon the mode in which it is proposed to conduct the re-issue of this great work.

Each Part will contain twenty-four plates, and on an average twenty-four pages of letterpress. The plates will be all carefully examined by the Editor, and errors in outline or colour corrected. At the time when the work was first published, characters taken from the fruit were not so much employed in distinguishing species as at present, and in general no figures of fruit were given: this will now be remedied. Magnified representations of the organs will also be added where necessary.

Plates of the whole of the flowering plants figured in the original edition (with a few exceptions noticed below), and those in the four volumes of the "Supplement to English Botany," will now be given, and also those which Mr. SALTER has in preparation for the fifth volume of the "Supplement."

In several instances entirely new plates will be required, some of the original ones being too incorrect; and some species have not yet been figured for this work. When these new plates are not ready at the time when the Part to which they belong should appear, twenty-four plates will still be issued, but their numbers will not be consecutive, and those which are wanting will be given subsequently, as soon as examples of the plants can be obtained from which drawings may be made. By attending to the numeration, these additional figures can be arranged in their proper places when the work comes into the binder's hands. In the present number there are two such omissions in the genus *Thalictrum*, and one in *Ranunculus;* but it is hoped that these may be procured and figured in the course of next summer.

As the numbers on the plates of the first edition of "English Botany" have been so often quoted in botanical works, they have been still retained, to facilitate reference. Those of the present edition will be found in Roman characters, to avoid confusion from the presence of a double set of numbers.

In the previous editions several plants were included which more recent observers have failed to detect in the localities where they were alleged to grow. Some of these,—such as *Ranunculus alpestris*, *Ranunculus gramineus*, *Vella annua*, *Buffonia annua*,—will now be excluded, as there can be no doubt that they have been erroneously reported to occur in Britain. A few plates will also be omitted which represented plants accidentally introduced from foreign countries, and which, having failed to establish themselves, are no longer to be found. The substitution of interesting critical species for these interlopers will doubtless be regarded as a most profitable exchange by the Botanist.

The letterpress consists of two portions, each independent of the other. The purely technical matter, including the descriptions and distribution of the plants figured, has been assigned to the Editor: while the popular part, commencing with the English name, has been intrusted to Mrs. LANKESTER, the well-known authoress of "Wild Flowers Worth Notice," "British Ferns," &c. This portion will comprise the uses and medical properties of plants, on which subjects the reader will thus have the benefit of Dr. Lankester's extensive information.

Respecting the Editor's own share of the work, he must not omit to mention his obligations to those botanical friends to whom he is indebted for advice and assistance in this undertaking; among whom may be named Professor **Babington**, Mr. **Baker**, Mr. A. G. **More**, and Mr. **Hewett** C. **Watson**; but his thanks are especially due to the Rev. W. W. **Newbould**, who has assisted him not only with the loan of many valuable books which could not otherwise have been consulted, but also with the results of his long and extensive study of critical plants and synonyms.

The arrangement and limitations of the natural orders and genera will be mainly taken from Bentham and Hooker's newly-published "Genera Plantarum," in so far as that valuable work is available.

It is deemed unnecessary to give references to botanical works under each species, unless they afford additional information, or when a species has been described by some recent author under a different name from that which is adopted in the text.

A list of the abbreviations of the names of the authors quoted must be postponed until the conclusion of the work.

The accentuation of the scientific names of the plants described will be marked in the Index.

PRELIMINARY REMARKS.

THE Tyro is no doubt often surprised at finding his botanical mentors differing so widely among themselves in their estimate of the number of species contained in the British Flora; this difference is, however, more apparent than real, and arises from the various ways in which the term species is understood. In those cases where authors do not agree respecting the number of species contained in a genus, they would probably all admit the existence of the same number of groups or forms, more or less separable and definable by characters; but some do not consider that all of these groups deserve to be called species, while others give that title to every one of them. This variety of opinion will be found to prevail most in the Floras of districts which have been most carefully examined. It is not until the plants have received very minute attention that the less obviously distinct forms will be brought into notice. A good exemplification of this is to be seen in the daily-increasing divergence of opinion between two different classes of botanists as to the number of species contained in the well-examined Floras of Great Britain, France, Germany, and Belgium.

It will really be found that in many genera individual plants may be grouped into more restricted assemblages than species (taking the term in its widest acceptation), and that these subordinate groups bear to species somewhat the same relation that species themselves do to genera. To such the name of subspecies or races may be given.

There can be no doubt that these sub-species are well deserving of attention, and no reason can be assigned for neglecting them that would not apply equally to rejecting the examination of species, and confining the attention to genera or even natural orders alone.

It is, however, often extremely difficult to decide whether a certain form ought to be regarded as a species or a sub-species; occasionally, in a work on descriptive Botany, what are admitted as true species will be found to be quite as closely allied to each other as two other forms which the same author regards as mere varieties (sub-species in the present work). In fact, all botanists are guided in this matter by an imperfect kind of judgment, which is sometimes not far removed from caprice; and the present writer feels that he forms no exception to the general rule; indeed, no canons can be laid down that would be practically of much use in the very cases where they are most required.

Mr. WATSON, in his fourth volume of the "Cybele Britannica," suggests three terms,—ver-species, super-species, and sub-species. By the first of these, he intends the ordinary well-defined and generally adopted species; by sub-species, those more obscure groups of forms, which differ from ver-species only in having the distinctions between themselves slighter, or less generally recognized, or in apparently shading off more gradually into one another; and by super-species, the groups formed by uniting a number of sub-species, and which consequently include a greater variety of forms within their limits than is comprehended under the idea of a ver-species.

The real point of difference between botanists is, that some give the name of *species* to ver-species and super-species, while others apply it to ver-species and sub-species. But as no distinct line of demarcation can be drawn between ver-species and super-species on the one hand, and between ver-species and sub-species on the other, there is always room for difference of opinion even between those who admit these three classes.

The Editor proposes to recognize *sub-species*, and under this designation to direct attention to those plants which have less strongly-marked differences between them than are found between generally received species, but which are, nevertheless, too constant in their characters to be considered merely varieties. Such plants have recently attracted much notice from many continental and a few of our own Botanists; and though their labours have sometimes been stigmatized as species-making, we are indebted to them for a much more accurate knowledge of plants than we previously possessed.

The term *variety* is applied by the Editor to forms which are, or are supposed to be, confined to individuals, and which may revert to the original type in a single or a few generations, while a sub-species transmits its peculiarities for an indefinite period. In most cases, the permanence of character, which ought to be ascertained by observation, is only *inferred*, from the difference which exists between some two forms being considered as great as between others which are generally admitted to be permanent and distinct; and thus many mistakes no doubt occur respecting varieties and sub-species which better observation and long-continued cultivation may in time correct.

A *state* is even less permanent than a variety, for it may be removed in the same individual by altering the external circumstances,—such as soil, climate, place of growth, &c.

The foregoing is a brief explanation of the way in which these terms are applied in the present work, without which, misunderstanding might arise.

After the enumeration of the localities for each species, there will be found a line containing a general indication of the distribution, duration, and time of flowering. In this line the names England, Scotland, Ireland, denote that the species has occurred in the country mentioned. If any name be inclosed in brackets, it signifies that the species has been certainly introduced into the country of which the name is so treated. After these names the duration is indicated by the words Annual, Biennial, Perennial, Shrub, or Tree, which require no explanation; and lastly, the names of the seasons point out the time at which the plant usually flowers. To attempt giving a more exact definition of the time by stating the *month* of flowering seems inexpedient, as it varies much according to the locality, and even in the same locality in different years; being dependent on temperature.

PHANEROGAMIA,

OR

FLOWERING PLANTS:

PLANTS with flowers furnished with special organs of reproduction (stamens and pistils), and producing seeds containing an embryo previous to germination.

CLASS I.—DICOTYLEDONS.

Herbs, shrubs, or trees, which have a stem formed of concentric layers: a cellular pith in the centre; then one or more layers of elongated cells intermixed with vessels; the whole surrounded by a separable bark or rind, having elongated cells on the inner and ordinary short cells on the outer side.

Seed containing an embryo having two opposite seed-leaves or cotyledons, between which lies the bud which is to form the future stem.

Leaves with branched anastomosing veins. Parts of the flower generally 5, or 4, or some multiple of these numbers. Calyx and corolla generally unlike in texture.

SUB-CLASS I.—POLYPETALÆ THALAMIFLORÆ.

Calyx almost always free from the ovary. Sepals distinct, very rarely united. Torus small or elongated, very rarely expanded into a thick fleshy disk. Petals in 1 or 2 whorls, unlike the sepals, or in 2 or more whorls passing gradually into sepals, inserted on the torus, or rarely into the very bottom of the calyx, and united at the base of the staminal whorls (abnormal or even wholly absent in a few cases). Stamens commonly but not always indefinite, inserted into the torus, or more rarely adhering to the base of the calyx, or that of the petals. Ovary superior, or rarely immersed in an enlarged fleshy torus.

NATURAL ORDER I.—**RANUNCULACEÆ.**

Herbs with alternate leaves, often palmately cut or divided; generally without evident stipules, but often having rudimentary ones, indicated by the expansion of the base of the leaf-stalk. Flowers perfect, generally regular, with 4 or 5 sepals, usually deciduous, and more or less petaloid. Petals equal in number to the sepals, or more numerous, absent in some cases, and in others very abnormal in form. Æstivation imbricated. Stamens indefinite, free. Anthers innate. Pistils numerous, rarely solitary, usually free, 1-celled, with simple styles or sessile stigmas. Ovules anatropous. Disk none. Fruit of indehiscent achenes or dehiscent follicles. Seeds without an arillus. Embryo at the base of copious horny albumen.

Exceptions in British genera to the above:—

Clematis has a woody stem, opposite leaves, and valvate æstivation.

Myosurus and some Thalictra and Ranunculi have definite stamens. Ranunculus Ficaria has only 3 *sepals; and the upper leaves of Ranunculus hederaceus are opposite.*

Actæa has the fruit a berry.

Pæonia has a more or less evident disk.

TRIBE I.—CLEMATIDEÆ.

Sepals valvate. Petals none, or like abortive stamens. Carpels numerous, 1-ovuled. Ovules pendulous. Achenes indehiscent. Stems often woody, and climbing. Leaves opposite.

GENUS I.—**CLEMATIS.** *Linn.*

Sepals 4 (rarely 5—8), petaloid, valvate, deciduous. Petals none, or shorter than the sepals, and gradually passing into stamens. Achenes numerous, tipped by the persistent feathery style, which is often plumose.

SPECIES I.—**CLEMATIS VITALBA.** *Linn.*

PLATE I.

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. LXIV. Fig. 4667.

Sepals thick, downy on both sides. Carpels with feathery tails. Stem woody, climbing. Leaves pinnate. Leaflets ovate-acuminate.

Common in hedges and among bushes, especially on a calcareous soil in the South of England, extending northward to South Wales and Yorkshire. It also occurs in the North of England, Scotland, and Ireland, but only in places where it has doubtless been introduced.

England [Scotland, Ireland]. Shrub. Summer and Autumn.

A small shrub with tough trailing or climbing branches, supporting themselves by means of the petioles, which, below the leaflets twine round adjacent bodies, and remain after the fall of the leaves. Leaves opposite, with about 5 stalked 3- to 5-nerved leaflets, the edges of which are generally coarsely serrated or even lobed, but occasionally entire. Flowers in lax terminal or axillary panicles. Sepals and stamens greenish white. Carpels ovoid compressed, reddish brown, with long bent white feathery tails, about 1½ inch long; receptacle woolly.

Common Traveller's Joy, or Old Man's Beard.

French, *Clématite blanche.* German, *Steigende Waldrebe.*

The scientific name *Clematis Vitalba* is derived from κλῆμα (*klema*), a tendril, from the climbing nature of the species, and *Vitis alba*, white vine. It is sometimes called Virgin's Bower, which name was given to it by Gerarde in 1597, "by reason of the goodly shadowe which they make with their thick bushing and climing; as also for the beautie of the flowers, and the pleasant savour or scent of the same." This pretty plant is one of the greatest ornaments of our country hedges, with its copious clusters of white blossoms and succeeding heaps of feather-tailed silky tufts. In some places it is used as fodder for cattle, an acrid juice which the leaves contain whilst fresh, disappearing after drying. The branches are tough enough to make withes for faggots, for which purpose it is always used in woods where it can be procured. As a medicine, it has had some reputation internally as a remedy for dropsy, and in the form of an infusion for rheumatism. In France, the irritating and vesicatory properties of its juice are sometimes turned to account by beggars, who apply it to their skin to produce ulcers and excite compassion. In the same country the twigs are used to make beehives, baskets, &c.: they probably grow stronger in a warm climate. A section of Clematis wood forms a very interesting object under the microscope; the air-vessels and cells are arranged in a radiate manner, allowing the air to circulate freely through them. This circumstance is turned to account by our village boys, who smoke pieces of the wood as they do of rattan cane; hence it is sometimes called smoke-wood and smoking-cane.

TRIBE II.—ANEMONEÆ.

Sepals imbricated. Carpels numerous, 1-ovuled. Ovule pendulous, with the raphe dorsal. Achenes indehiscent. Stem herbaceous.

GENUS II.—THALICTRUM. *Linn.*

Involucre none. Sepals 4 or 5, petaloid, caducous. Petals none. Stamens definite or indefinite. Ovaries numerous. Achenes stipitate. Styles deciduous or none. Leaves alternate, ternately decompound.

This genus is probably allied to the Helleboridæ, and may be considered as a form of that group, having the ovules reduced to one, and the fruit indehiscent.

SPECIES I.—THALICTRUM ALPINUM. *Linn.*

PLATE II.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXVI. Fig. 4625.

Stem terminating in a simple raceme of drooping flowers. Pedicels recurved in fruit. Carpels stipitate, oblong, slightly clavate, bulging on the inner side. Anthers apiculate.

Not uncommon on wet rocks and débris on mountains; and in the extreme North, on wet moors almost down to the sea-level. Occurs in Wales, the North of England, Ireland, and Scotland.

England, Scotland, Ireland. Perennial. Summer.

The smallest species of the genus, with slender wiry stems, 3 to 9 inches high, with short stolons at the base, and biternate-stalked leaves, which are mostly radical, though in luxuriant specimens there is often one or more situated on the lower part of the stem. Leaflets small, roundish, bluntly serrated, much less variable in shape than in the other British species, deep green above, whitish below. Flowers in a simple terminal raceme, which is drooping at the point before the flowers open, then becoming erect, while the individual flowers droop: these are small, with 4 pale purplish-brown sepals, and 8, 10, or more long pendent stamens, with yellow anthers. Fruit of 2 or 3 narrowly-oblong ribbed achenes, thickened at the point, which is bent outwards by the carpel bulging on the inner side near the end. Bracts small, lanceolate, entire.

Alpine Meadow Rue, or Poor Man's Rhubarb.

French, *Rue des Prés*, or *Pigamon.* German, *Wiesenraute.*

The generic name, from θάλλω (*thallo*), I flourish.

SPECIES II.—THALICTRUM MINUS. *Linn.*

PLATES III. IV. V.

Stem striated, terminating in a branched irregularly pyramidal or flat-topped lax panicle of drooping flowers. Fruit pale olive, irregularly ovoid, slightly compressed, bulging on the inner side near the apex. Fruit-pedicels ascending. Anthers apiculate. Leaves ternately bi- or tri-pinnate.

SUB-SPECIES I. — **Thalictrum eu-minus.***

PLATES III. & IV. (Named there *T. minus.*)

(T. minus, *Reich.* Ic. Fl. Germ. et Helv. III. *Ran.* Tab. XXVII. Fig. 4627.)
T. minus "L." *Bab.* Ann. Nat. Hist. ser. ii. Vol. XI. p. 266; and Man. Br. Bot. ed. v. p. 3. *Fries.* Mant. III. p. 45; and Summ. Veg. Scand. p. 155. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 4. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 6. *Hook. & Arn.* Br. Fl. ed. viii. p. 5 (exclude β & γ). *Benth.* Handbk. Br. Fl. p. 56 (in part). *Sm.* Engl. Fl. Vol. III. p. 41 (in part).

Stem leafless at the base. Auricles of the stipules "spreading." Branches of the petioles ascending. Panicle irregularly pyramidal, primary bracts resembling leaves, but much smaller; secondary ones usually simple.

Var. α. *Maritimum.*

PLATE III.

Panicle nearly as broad as long, with divaricate branches.

Var. β. *Montanum.*

PLATE IV.

T. montanum, *Wallroth,* Sched. Crit. p. 255.

Panicle longer than broad, with patent-ascending branches.

Rather scarce, but generally distributed; *α* occurring on sandy sea-coasts, *β* on stony pastures, inland.

England, Scotland, Ireland. Perennial. Summer.

Rootstock stoloniferous. Stem flexuous, striated, 6 inches to a foot high in *α*, but considerably taller in *β*, occasionally attaining the height of 2 feet or more; lower part of the stem with leafless sheaths. Leaves triangular in outline, bi- or tri-pinnate, the lowermost primary subdivisions so much larger than the others that the

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* In adopting the division of species into sub-species, a difficulty occurs when one of the latter bears the same name as the species of which it forms a part. This difficulty can only be overcome by giving a new name to the sub-species. Some inconvenience must always arise from any change of nomenclature; but greater confusion and uncertainty would assuredly result from having the name which properly belongs to the whole also applied to one of its parts, to the exclusion of the others.

When a sub-species requires a distinctive appellation, it seems best to follow the plan adopted in naming sub-genera, which is to give the name of the genus with the prefix *eu* to the typical sub-genus. In accordance with this system, the name *eu-minus* is leaf becomes almost ternate. Leaflets very variable in shape, usually about as broad as long, and 3-lobed. Flowers drooping when fully expanded. Sepals 4, fawn-colour and purplish-brown. Achenes 3 to 6, sessile, regularly ovoid, bulging slightly at the base on the outside, but much more conspicuously about one-third from the tip on the inner side, marked with about 8 ribs. Plant very variable in the extent to which it is covered by glaucous powder or small stalked glands. T. calcareum of Jordan, which occurs at Ben Balben, near Sligo, is considered by Professor Babington to be a form of this species; but, judging from dried specimens, it appears to me to be simply the usual inland form of the plant,—our variety β montanum.

SUB-SPECIES II.—**T. flexuosum.** *Bernh.*

PLATE V.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXVIII. Fig. 4628.
Bab. Ann. Nat. Hist. ser. ii. Vol. XI. p. 267; Man. Brit. Bot. ed. v. p. 4; and Fl. Camb. App. p. 299. *Fries*, Mant. III. p. 47; and Summ. Veg. Scand. p. 136.
T. minus β, *Hook. & Arn.* Brit. Fl. ed. viii. p. 5.
T. minus (in part), *Benth.* Handk. Brit. Fl. p. 56.
T. minus (in part) and T. majus (in part), Sm. Eng. Fl. Vol. III. pp. 41, 42.

Stem leafy at the base. Auricles of the stipules "reflexed." Branches of the petioles divaricate. Panicle loose, usually sub-corymbose at the top, primary and secondary bracts resembling the leaves. In stony places and amongst bushes, or occasionally in sandy places on the sea-shore, apparently as frequent as the preceding sub-species, with which it is generally confounded. In the North of England and in Scotland it appears to be the more common form of the two.

England, Scotland, Ireland. Perennial. Summer.

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given to the Thalictrum minus of Fries, to distinguish it from the aggregate species. Several authors consider that T. minus should include T. Kochii and T. saxatile, as well as our T. eu-minus and T. flexuosum. That is a matter of opinion; and those who hold that view have only to make the specific character here given to T. minus more comprehensive, so as to admit under it the two extra forms as sub-species with the names they already bear. Eu-minus is given to a special form, to avoid confusion, from the employment of the name *minus* restricted to a special form, and *minus* applied to a group of forms, whether the forms included in that group be many or few. What is required is some means of distinguishing each of the forms separately. I have tried, by the use of the simple prefix mentioned, to distinguish the part from the whole, with the least possible variation from the name which has been applied to the former by some authors, and to the latter by others; and though open to the objection of being a Greek prefix, while specific names are usually of Latin origin, the advantages seem to me too great to be outweighed by so trifling a defect.

Usually much taller than the preceding sub-species, being from 1 to 5 feet high, and more leafy; but in most respects it is very similar, though the leaflets are usually much larger and rather longer in proportion to their breadth. The panicle is generally less pyramidal, being frequently flat-topped, and the achenes are rather longer, with about 10 ribs. T. minus is represented in the Linnæan Herbarium by a specimen of this plant.

Lesser Meadow Rue.

SPECIES III.—**THALICTRUM KOCHII.** *Fries.*

PLATE VI.

Bab. Man. Brit. Bot. ed. v. p. 4.
Fries, Mant. III. p. 46; and Sum. Veg. Scand. p. 136. T. saxatile, *Bab.* Ann. Nat. Hist. ser. ii. Vol. XI. p. 263. *Gr. & Godr.* ? Fl. de Fr. p. 7.

Stem very slightly zigzag, smooth, except immediately below the sheaths, where it is striated, leafy to the base. Stipules with "horizontal" auricles. Branches of the petioles spreading. Panicle lax, regularly pyramidal, with spreading branches. Flowers drooping. Primary bracts resembling the leaves, but very small; secondary ones usually entire. Achenes regularly ovate-ovoid, pale olive. Anthers apiculate. Leaves bi- or tri-pinnate. Leaflets 3- to 5-lobed.

Apparently very local, as it is only known to occur in damp places in the Lake district, — "Brathay, near Ambleside, and St. John's Vale, near Keswick." (*Bab.*)

England. Perennial. Summer and Autumn.

A large plant, with the stem often 4 feet high, bearing much resemblance to the more luxuriant states of T. flexuosum, from which it is best distinguished by the achenes, which are scarcely compressed, and not at all gibbous on the inner side, as in that plant. The stem also differs in not being striated, except immediately under the leaf-sheaths, the striæ on which are continued downwards for a short distance. The panicle is more regularly pyramidal, and less leafy. My knowledge of this plant is unfortunately only founded on dried specimens. I have an imperfect specimen from "near St. Kevett's" ? Cornwall, received from Mr. Baker, which appears to belong to this species; but it is in flower, not in fruit.

Koch's Meadow Rue.

SPECIES? IV.—THALICTRUM SAXATILE. "*Schleich.*" *Bab.*

PLATE VII.

Reich Ic. Fl. Germ. et Helv. *Ran.* Tab. XXXIV. Fig. 4622, b?
Bab. Fl. Camb. App. p. 299; and Man. Brit. Bot. ed. v. p. 4.
T. minus γ? *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 5.
T. collinum? *Wall.* Shed. Crit. p. 259.

Stem slightly zigzag, smooth, with a few raised lines, leafy to the base. Stipules with "reflexed" auricles. Branches of the petioles spreading. Panicle lax, irregularly pyramidal, with ascending branches. Flowers "erect"? Primary bracts resembling the leaves, but very small; secondary ones entire. Achenes regularly oval-ovoid, very pale olive. Anthers apiculate. Leaves bi- or tri-pinnate. Leaflets 3- to 7-lobed.

Rare on chalky hedge-banks and in stony places. "Allington Hill, Little Trees Hill, Gogmagogs, Fullbourne, and roadside between Newmarket and Snailwell, Cambridgeshire; also Cheddar Cliffs, Somerset."—(*Bab.*)

England. Perennial. Summer.

Smaller and less branched than T. Kochii, which it resembles in the form of the fruit, and of which it may be only a sub-species. Stem 1½ to 3 feet high, not closely striate, as in T. minus, but with distant raised lines, so that it may be termed angular. Of this plant I possess no specimen, but, through the kindness of Professor Babington, I have had the opportunity of examining those in his herbarium; and I have also seen specimens in the British Museum, collected by the Rev. W. W. Newbould at Fullbourne, which certainly belong to this species. A plant from Disseth, Flintshire, not in fruit, may also belong to it. These agree well with Reichenbach's figure quoted above, provided that the flowers be erect, as Professor Babington believes; but this is a point almost impossible to determine from dried specimens. I feel considerable doubt whether any of this group, of which T. minus is the type, have the flowers erect when fully expanded, and before the fruit has begun to set. If the flowers be *drooping* in the present species, there can be no doubt it is T. collinum of Wallroth, with which it agrees in all other characters. I hope, however, next year to examine the plant when growing, and clear up this point.

Stone Meadow Rue.

SPECIES V.—THALICTRUM FLAVUM. *Linn.*

PLATE VIII.

Stem erect, furrowed. Panicle narrowly pyramidal, or sub-corymbose, its branches terminating in very compact, umbellate, or corymbose tufts of erect flowers. Achenes ovoid, regular, very dark olive when ripe. Anthers not apiculate. Leaves ternately bi-pinnate. Leaflets longer than broad, 3-lobed.

Var. α. *Sphærocarpum.*

T. flavum, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XLIV. Fig. 4639.
Boreau, Fl. du Cent. de Fr. ed. ii. Vol. II. p. 5.

Panicle generally contracted. Achenes globular-ovoid.

Var. β. *Riparium.*

T. riparium, *Jord. Boreau,* Fl. du Cent. de Fr. ii. 5.

Panicle generally rather lax. Achenes oval-ovoid.

Var. γ. *Morisoni.*

T. Morisoni, *Reich.* Ic. Fl. Germ. et Helv. III. *Ran.* Tab. XLV. Fig. 4640.
Boreau, Fl. du Cent. de Fr. ed. ii. Vol. II. p. 4.

Panicle generally interrupted, the fascicles of flowers small. Achenes oblong-ovoid.

Figures of the fruits of these three varieties are given in Plate VIII.

In wet meadows, and by the banks of rivers and ditches, not uncommon in England; but scarce in Scotland, where Argyleshire and Fifeshire appear to be the northern limits. I have seen specimens of α, from Cambridgeshire, Derbyshire, and Herefordshire; of β, from Surrey, Essex, and York; and "T. flavum, E. B. 367," is quoted by Reichenbach, under his figure of T. Morisoni.

England, Scotland, Ireland. Perennial. Summer.

Less glaucous than the three preceding species, and with a more extensively creeping and stoloniferous rootstock. The stem, which is from 2 to 4 feet high, is thicker and more deeply furrowed. Leaflets less numerous, and usually much larger and narrower in proportion to their length; but they are very variable in shape, being ovate or oblong, and the upper ones sometimes even linear; generally 3-lobed. Panicle narrower, and its component parts more compact. The flowers have shorter pedicels and cream-coloured sepals, while the bright yellow erect anthers give that predominant tint to the inflorescence from which the species takes its specific name. Fruit small and dark, with 8 very prominent ribs. α, β, and γ are probably only varieties, as the characters taken from the fruit and from the panicle are sometimes interchanged; though in β the latter appears to be always more ample and corymbose than in the other two.

Yellow Meadow Rue

Is probably the θαλικτρον (*thaliktron*) of Dioscorides, iv. 96; and of Pliny, xxvii. 13. It has a root of a yellow colour, which is said to resemble rhubarb both in its appearance and properties. It yields a yellow dye, which may be employed for dyeing wool, and was formerly used as a remedy in jaundice. Like many of the family to which it belongs, it is very acrid, and produces blisters on the skin when applied to it.

GENUS III.—ANEMONE. *Linn.*

Flowers involucrate. Sepals 4 to 20, petaloid, often downy, deciduous. Petals none. Stamens indefinite. Ovaries indefinite. Achenes capitate, indehiscent, terminated by the persistent styles which are in some species naked, and in others feathery.

Herbs with dissected or lobed radical leaves and scapes with an involucre of 3 leaves in a whorl; or occasionally when the scape is branched there is a pair of opposite leaves, showing in this, as well as in general habit, an approach to *Clematis*, from which, however, the imbricated sepals separate it.

SUB-GENUS I.—PULSATILLA. *Tournef.*

Exterior stamens gland-like. Styles lengthening into feathery tails. Involucre at last distant from the flower.

SPECIES I.—ANEMONE PULSATILLA. *Linn.*

PLATE IX.

Pulsatilla vulgaris, *Mill.* *Reich.* Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. LIV. Fig. 4657.

Flower erect, solitary. Involucre sessile, divided to the base into linear segments. Calyx campanulate, composed of 6 elliptical sepals, silky externally. Achenes with long white feathery tails.

Leaves bi-pinnate, the segments pinnatifid, the ultimate lobes linear.

Very local, growing on chalk downs and limestone pastures, in the counties of Berks, Oxford, Herts, Suffolk, Cambridge, Huntingdon, Bedford, Northampton, Gloucester, Lincoln, and York.

England. Perennial. Summer.

Rootstock thick, somewhat woody, producing a rosette of shortly-stalked leaves, which do not attain their full size until some time after the flowers fade. Leaf-stalks woolly. Leaves with long rather distant hairs, especially along the petiole and its subdivisions. Involucre from 2 to 4 inches above the base of the scape, which bears a single flower about an inch higher up. Flower opening fully only in sunshine, erect but drooping after it begins to fade. Sepals 6, light purple, paler and silky on the outside. The part of the scape above the insertion of the involucre continues to grow until it is from 3 to 6 inches above that point by the time the fruit is mature. Head of fruit erect, globular. Achenes oblong-fusiform, pilose, brown; their bent feathery tails about an inch and a half long. Plant more or less hairy.

Pasque Flower. Anemone.

French, *Anémone.* German, *Windblume.*

Anemone, wind-flower, from ανεμος (*anemos*), wind, because it is supposed the flowers do not expand until blown by the wind. The specific name, from *pulso*, I beat, is in allusion to the same conditions, being beaten by the wind. The Anemone, although frequently choosing exposed and windy places for its habitation, is by no means a sturdy flower. Its delicate petals are easily scattered, and we are reminded of the poetical allusion of Sir W. Jones:—

> "Youth, like a thin Anemone, displays
> His silken leaf, and in a morn decays."

This species possesses the properties of the order. The leaves and flowers have an irritant and corrosive quality; if placed on the tongue, they will produce blisters, and the roots, if administered internally, will occasion nausea and sickness. The extracted juice has been used as an external application in cases of paralysis and amaurosis. The juice of the petals will stain paper green, and has been used to colour the Paschal eggs in some countries; whence it has been supposed the English name is derived. Gerarde, however, expressly informs us that he himself was "moved to name" this the Pasque flower, or Easter flower, because of the time of its appearance.

SUB-GENUS II.—EU-ANEMONE.

Stamens all bearing anthers. Styles short, little changed when the fruit is ripe. Involucre distant from the flower.

SPECIES II.—ANEMONE APENNINA. *Linn.*

PLATE X.

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. XLVII. Fig. 4645.

Flower erect, solitary. Involucre of 3, stalked ternate leaves; segments pinnatifid with oblong blunt lobes. Calyx spreading, composed of 10 or 12 ligulate, oblong, glabrous sepals. Carpels ovate compressed, glabrous. Radical leaves twice ternate, with pinnatifid segments similar to those of the involucre.

In woods, but certainly not native. It has, however, grown in Wimbledon Park, Surrey, for more than a century, and has also become naturalized at Cullen, in Banffshire. It also grows at Tonbridge Castle, in Kent, and has been reported from the counties of Middlesex, Hertford, Bedford, Salop, and York.

[England, Scotland]. Perennial. Spring and early summer.

Rootstock thick, tuberous, olive-black. Radical leaves 1 to 3, growing from the same point of the rhizome as the scape, which is from 3 to 9 inches high, with the involucre about the middle. Flowers with the sepals slightly curving backwards when fully expanded, bright sky-blue, paler externally. Achenes in a globular head, broadly ovate, compressed, apiculate. Plant nearly glabrous. Leaflets all nearly similar.

Blue Anemone, or Blue Mountain Anemone.

SPECIES III.—ANEMONE NEMOROSA. *Linn.*

PLATE XI.

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. XLVII. Fig. 4644.

Flower erect, solitary. Involucre of 3, stalked ternate leaves; segments pinnatifid or cut, with the lobes rather pointed. Calyx spreading, composed of 6 (rarely 5 to 9) glabrous elliptical sepals. Achenes elliptical, compressed, downy. Radical leaves bi-ternate, with pinnatifid segments similar to those of the involucre.

Plentiful in woods and bushy places throughout the kingdom.

England, Scotland, Ireland. Perennial. Spring.

Rootstock creeping, about the thickness of a quill, fleshy, brownish-black. Leaves 1 or 2, appearing after flowering, but not produced from the same point of the rhizome as the scape, which is

6 to 12 inches high, with the involucre rather above two-thirds of the length from the base. Flower white, or tinged externally with purple or pink, sometimes wholly purple. Peduncle hooked in fruit, which consists of a round head of downy carpels. Plant with scattered hairs. Lateral segments of each set of leaflets deeply cleft; central one only cut or serrate.

Wood Anemone. Wind-Flower.

The specific name from *nemorosus*, woody. This most delicate and pretty species is truly

> "The coy anemone, that ne'er uncloses
> Her leaves until they're blown on by the wind."

Its early appearance, after the dull months of winter, invests it, perhaps, with a greater poetical charm than its real beauty would demand, if it were found surrounded with other flowers. It is certain, however, that on a fine unclouded day nothing can be seen more lovely than a mass of these bright, delicate little flowers, surrounded by their natural guardians, the dark finely-cut leaves. They are natural barometers, and close at the approach of rain. Innocent as is their appearance, they retain all the acrid nature of their family, and are poisonous and biting to the tongue. The older herbalists recommend applications of various parts of the plant for headaches, tertian agues, and rheumatic gout. By garden culture the stamens become transformed into petals, which renders it an object of greater admiration to the florist than when in its original simplicity.

SPECIES IV.—ANEMONE RANUNCULOIDES. *Linn.*

PLATE XII.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XLVII. Fig. 4663.

Flowers erect, solitary or in pairs. Involucre of 3 almost sessile ternately-divided leaves, with lobes pinnatifid or cut, rather acute. Calyx spreading of 5 (rarely 6 to 8) oval sepals, slightly downy exteriorly. Carpels elliptical, compressed, downy. Radical leaves with 3 to 5 divisions similar to the segments of the involucre.

This species has scarcely so much claim as *A. Apennina* to be considered as a naturalized plant; it has, however, long grown in ornamental grounds, as at Abbot's Langley in Herts, and near Worksop, in Nottinghamshire; it is also reported from Kent, Norfolk, Suffolk, Salop, Leicester, and York.

[England.] Perennial. Spring.

Very similar to *A. nemorosa* in habit; but at once distinguishable by the bright yellow flowers, and the much more shortly-stalked divisions of the involucre and leaves; the head of the carpels is less drooping than in the last.

Yellow Wood Anemone, or Crowfoot Wood Anemone.

GENUS IV.—ADONIS. *Linn.*

Sepals 5 to 8, coloured, deciduous. Petals 5 to 16, conspicuous, without a nectariferous pore. Stamens indefinite. Ovaries indefinite. Achenes in oblong heads, or short spikes, tipped by the short persistent style.

Erect herbs with pinnatipartite, multifid leaves with linear segments, and solitary terminal flowers.

SPECIES I.—ADONIS AUTUMNALIS. *Linn.*

PLATE XIII.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXIV. Fig. 4621.

Sepals glabrous. Petals concave, connivent. Achenes in an oblong head, ovate-tetrahedral, without teeth, reticulated.

A weed in corn-fields, rare except in Kent, where it is not uncommon in the chalky districts. It appears also to have established itself in the Isle of Wight, and in Essex, Dorsetshire, Suffolk, and Wiltshire, and is occasionally to be seen in other counties. It has been reported from Glasgow and Dublin; but is not included in a list of Irish plants with which I have been favoured by Mr. D. Moore, of Glasnevin.

England [Scotland? Ireland?]. Annual. Late Summer and Autumn.

Stem 6 to 18 inches high, furrowed, branched in the larger examples, with alternate leaves, the lower ones stalked, the upper sessile, all twice or thrice very deeply pinnatifid, the ultimate lobes linear acute. Flowers terminating the stem and branches. Calyx of 5 ovate purplish sepals. Petals 5 to 8, obovate, scarcely longer than the calyx, pure deep red, with a dark purple mark at the base. Anthers brown; head of carpels about three-fourths of an inch long. Achenes dark green, on a slender pointed receptacle. Plant almost glabrous.

Autumnal, or Common Pheasant's Eye.

French, *Goutte de Sang.* German, *Die Adonisblume.*

Named after Adonis, the youth beloved by Venus, who was at his death changed into a flower.

"When the blood was shed,
A flower began to rear its purple head."—*Ovid.*

GENUS V.—**MYOSURUS.** *Linn.*

Sepals 5 (rarely 6 or 7) with a small spur at the base, deciduous. Petals equal in number to the sepals, narrow, with the claw filiform, tubular and nectariferous. Stamens definite. Ovaries indefinite. Achenes in a long cylindrical tapering spike, apiculate.

Small annuals with radical leaves and naked scapes, bearing small yellowish flowers. This genus and Adonis approach the tribe Ranunculeæ, only differing in the position of the ovule.

SPECIES I.—**MYOSURUS MINIMUS.** *Linn.*

PLATE XIV.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XIV. Fig. 4569.

Sepals linear-oblong, spreading, with the spur applied to the peduncle. Petals rather shorter than the calyx, very slender in the tubular basal half. Achenes very numerous, with a membranous margin, and a dorsal keel commencing above the base and projecting in a mucro beyond the apex of the fruit.

Rather rare, in sandy corn-fields and gravel-pits. It appears to be most frequently met with in the East of England, becoming rarer towards the West and the North, where Northumberland appears to be the limit.

England, Ireland. Annual. Early Summer.

A small glabrous plant with a tuft of narrow, linear, somewhat fleshy radical leaves, and numerous, naked, 1-flowered scapes, 2 to 5 inches high. Flowers very small, very pale greenish-yellow. Sepals narrowly-oblong, with the basal spur applied to the scape. Petals formed of a slender tube, terminating in a short ligulate limb. Spike of carpels 1 to 2 inches long when mature; receptacle filiform; the oblong pale-brownish achenes are attached to it by their inner faces.

Common or Little Mousetail.

French, *Myosure, Queue de Souris.* German, *Mauseschwanz.*

From μυς (*mus*), a mouse, and ουρα (*oura*), a tail, in reference to the elongated receptacle or the spike of seed-vessels, which greatly resembles the tail of a mouse.

TRIBE III.—RANUNCULEÆ.

Sepals imbricated. Ovaries 1-ovuled. Ovule ascending, with the raphe ventral. Achenes indehiscent, usually indefinite.

GENUS VI.—**RANUNCULUS.** *Linn.*

Sepals generally 5 (rarely 3), caducous. Petals 5, or more (up to 15), with a nectariferous pore at the claw, covered by a small scale, or simply with an elevated border on the lower side. Stamens indefinite, or sometimes definite. Achenes in several rows, forming a globular, ovoid, or oblong head, and apiculate or rostrate by the persistence of the short style or its base.

The British species have all yellow or white flowers.

SUB-GENUS I.—BATRACHIUM. D. C.

Sepals 5. Petals 5, without a scale covering the nectary. Style short. Carpels with transverse waved ridges. Aquatic plants, with the lower or even all the leaves divided into linear capillary segments. Stipules conspicuous, membranous. Peduncles opposite the leaves, or rarely axillary, arched backwards after flowering. Petals white, with a yellow base in the British species; nectariferous pore without a scale, but having a prominent border on the lower side of the opening.

SPECIES I.—**RANUNCULUS CIRCINATUS.** *Sib.*

PLATE XV.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. II. Fig. 4575.
Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 401; and Man. Brit. Bot. ed. v. p. 8.
Batrachium circinatum, *Fries*, Mant. III. p. 52.
Ranunculus divaricatus, "*Schrank*," *Koch.* Syn. Fl. Germ. et Helv. ed. ii. p. 13. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 25. *Boreau*, Fl. du Centre de la France, ed. iii. Vol. II. p. 12.
Ranunculus aquatilis γ, *Sm.* Eng. Fl. Vol. III. p. 55.
Ranunculus stagnalis, *Wall.* Sched. Crit. p. 285.

Submerged leaves almost sessile, orbicular in outline, divided into short comparatively rigid capillary segments spreading in one plane; floating leaves none. Stipules narrow, entirely adnate, without auricles. Peduncles much longer than the leaves, slightly tapering upwards. Petals 2 or 3 times longer than the calyx. Stigma cylindrical. Achenes loosely packed in a globular head; their inner edge nearly straight, their outer convex.

Rather common in ditches and pools in England; but the only Scotch specimens I have seen are from Lochend, near Edinburgh. It is marked in Mr. Moore's list of Irish plants.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stems branched, slender, and very easily broken. Leaves dark-green, ½ to 1 inch in diameter, sub-sessile, trifurcate, and then several times forked, all in one plane, which is often at right angles to the stem. Petals obovate, white, with a yellow base. Nectary short. Stamens 15 to 20, longer than the head of pistils. Style bent, about as long as the ovary. Stigma on the recurved end of style. Receptacle hispid ovoid-globose; the fruit loosely packed in a globular head. Achenes often hispid, with rather faint transverse, wrinkled ridges, ovoid, compressed, with the inner margin slightly convex, and terminated by the persistent style, or its base, outer margin semicircular, apex rather acute.

The leaves of this plant are so unlike any of the other British species, that in a recent state it cannot be confounded with them. Professor Babington places it in a section with the receptacle "not hispid;" but I have found it hairy in all the specimens I have examined.

Rigid-leaved Water Crowfoot.

French, generic name, *Renoncule.* German, *Ranunkel*, *Hahnenfuss*, or *Krähenfuss.*

The generic name from *rana*, a frog, because many of the species inhabit damp, moist places frequented by these creatures. Some botanists rather attribute the origin of the name to the fact of the divided leaves bearing a resemblance to the foot of a frog.

SPECIES II.—RANUNCULUS FLUITANS. *Lam.*

PLATE XVI.

Reich. Ic. Fl. Germ. et. Helv. Vol. III. *Ran.* Tab. II. Fig. 4577.
Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 402; and Man. Brit. Bot. ed. v. p. 8.
Koch, Syn. Fl. Germ et Helv. ed. ii. p. 13. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 25.
Boreau, Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 13.
R. aquatilis δ, *Sm.* Eng. Fl. Vol. III. p. 55.
R. fluviatilis, "Wigg," *Wall.* Sched. Crit. p. 284.

Submerged leaves petiolate or sessile, narrowly wedge-shaped in outline, divided into long, comparatively rigid, sub-parallel segments. Floating leaves (rarely produced), consisting of 3 long-stalked portions, which are wedge-shaped, or obovate-truncate, usually with

2 or 3 teeth or short lobes at the apex. Stipules broad, half-adnate, with large rounded auricles. Peduncles long, slightly tapering upwards. Petals much larger than the calyx, often in two rows. Stamens shorter than the head of pistils. Stigma cylindrical. Achenes (often abortive) loosely packed in a globular head; their inner edge straight, their outer curved. Receptacle at length glabrous.

Var. α. *peucedanifolius.*

R. peucedanifolius, *Desf.* Fl. Atl. Vol. I. p. 449.

Stem stout, leaves very long, petiolate. Peduncles usually shorter than the leaves from which they spring. Petals broadly obovate.

? Var. β. *Bachii.*

R. Bachii, *Wirtg. F. Schultz,* Arch. de Fl. Vol. I. p. 292.

Stem very slender. Leaves much shorter than in var. α, and almost sessile. Peduncles longer than the leaves from which they spring. Petals narrowly obovate.

Rather rare. In canals and running streams generally distributed in England; very local in Scotland, where the Whitadder in Berwickshire appears to be its northern limit. The variety β occurs in that river and in Staffordshire. This species is included in Mr. Moore's list of Irish plants.

England, Scotland, Ireland. Perennial. Summer.

Stem floating, often very long, branched. Leaves sometimes a foot long; the lower ones usually with long stalks, the upper sometimes nearly, or quite, sessile; and in β all the leaves are often so. Leaves trifurcate, with the primary segments sub-equal; these are several times forked, and their long, comparatively rigid segments (which are much fewer in number than in the leaves of the other species) form a slender tassel-like tuft. On mud left by the water the leaves are much shorter, and the segments broader and more fleshy in texture. Peduncles very thick in α, slender in β. Petals large, white, often more than 5, with a yellow base. Nectary with a rather elongate margin. Stamens numerous. Style short. Receptacle shortly conical; at first hispid, but glabrous when the fruit is ripe. Achenes loosely packed in a small globular head, obovate-ovoid, compressed, with very prominent transverse wrinkles; inner margin nearly straight, tipped by the persistent base of the style; outer edge semicircular, very blunt at the apex, where it bulges out beyond the point where the style is inserted, which thus appears to be lateral.

This species is readily known by the firm parallel leaf-segments, fewer in number than in the next species, one of the forms of which has some general resemblance to it.

River or Floating Water Crowfoot.

SPECIES III.—**RANUNCULUS AQUATILIS.** *Linn.*

Submerged leaves petiolate or sessile, ellipsoidal or transversely ovoid in outline, divided into diverging capillary segments, which spread upwards and downwards as well as laterally. Floating leaves (often present) alternate, reniform or orbicular in outline, more or less deeply 3-lobed, -cleft, or -partite. Stipules broad, with rounded free auricles. Peduncles scarcely narrowing upwards, and shorter than, or not much exceeding, the leaves opposite to which they spring. Stamens longer than the head of pistils. Style very short and thick. Stigma oblong. Achenes compressed, loosely packed in a globular head, their inner edge nearly straight to the tip, their outer convex. Receptacle hispid.

SUB-SPECIES I.—**Ranunculus peltatus.** *Fries.*

PLATES XVII. XVIII.

R. aquatilis, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. III. Fig. 4576.
Batrachium peltatum, *Fries,* Sum. Veg. Scand. p. 141.
Ranunculus aquatilis, *Koch* ? Syn. Fl. Germ. et Helv. ed. ii. p. 12. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 22. *Boreau,* Fl. du Cent. de la Fr. Vol. II. p. 11.

Submerged leaves trifurcate, afterwards repeatedly bifurcate. Segments comparatively rigid, not collapsing, except in var. γ. Floating leaves on long stalks, sub-cordate at the base, reniform in outline, rather convex, with 3 lobes reaching about half-way down. Segments obovate, the lateral ones sub-bifid, all crenated (rarely entire) at the apex. Flowers, when expanded, about an inch in diameter. Petals broadly obovate, with 9 or more veins. Stamens indefinite. Carpels half-obovate, generally glabrous.

Var. α. *vulgaris.*

PLATE XVII.

R. peltatus, *Bab.* Ann. Nat. Hist. ser. ii. Vol. XVI. p. 398; and Man. Brit. Bot. ed. v. p. 7.

Submerged leaves loosely trifurcate. Floating leaves divided into 3 lobes, the sinus between the lobes reaching scarcely half-way down. Peduncles gradually tapering upwards, rather longer than the leaves. Petals contiguous. Nectary "ovate-oblong." Stigma club-shaped. Receptacle "ovate."

Var. β. *floribundus.*

PLATE XVIII.

R. floribundus, *Bab.* Ann. Nat. Hist. ser. ii. Vol. XVI. p. 397; and Man. Brit. Bot. ed. v. p. 7.

Submerged leaves closely trifurcate. Floating leaves divided into 3 lobes, the sinus between the lobes extending more than half way down. Peduncles not narrowing upwards, about equal to the leaves. Petals "not contiguous." Nectary "nearly circular." Stigma "tongue-shaped." Receptacle "spherical."

? Var. γ. *pseudo-fluitans.*

R. pseudo-fluitans, *Newbould* MS.

Submerged leaves tassel-like, with the segments very long and rather weak, collapsing. Floating leaves very rarely present, resembling those of var. α, or β. Peduncles slightly narrowing upwards, equal to, or exceeding, the leaves from which they spring. Nectary short, the opening roundish. Receptacle spherical.

Ponds, ditches, and rivers. Generally distributed, and common throughout the kingdom; α and β growing in still, and γ in running water.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Stem branched, floating, the extremity frequently rising out of the water. Stipules broad, membranous, whitish, with free rounded auricles. Peduncles rather slender, arched after flowering. Petals much larger than in any of the other sub-species, white, yellow at the base. Carpels ovoid, compressed, with the inner edge nearly straight, the lower edge unequally curved, so that the achene is narrow at the base and gibbous towards the tip, with prominent transverse-waved ridges; in 2 to 5 rows on the shortly ovoid, hispid receptacle.

This sub-species seems to be the most generally distributed of all those which are here put under R. aquatilis. It is distinguished from R. heterophyllus by its larger flowers, more slender peduncles, and by the floating leaves, which have the basal margins rounded, as well as the edges of the lobes, which are furnished with deep rounded crenatures at the apex.

When this plant grows out of the water, the stems are much shorter, and produce leaves which are all divided into short, rigid, somewhat fleshy capillary segments, much thicker than those of the submerged leaves, and of a much paler green colour; and a similar difference is observable in all the following sub-species, under like circumstances.

Professor Babington considers varieties α and β as distinct species, but to me they do not appear to be entitled to rank as such. The peduncles being produced from floating leaves, which is one of the characters of R. peltatus, I have found to be invariably the case only in two plants in which the submerged leaves are very few: one from Castleton of Braemar, gathered by myself, which stands in Professor Babington's herbarium as R. floribundus; the other from Sicily; collected by MM. E. and A. Huet de Pavillon, and named Ranunculus trinacrius by them, and which is evidently precisely the same form as the Braemar plant. I can see no great difference between the stigmas and receptacles of R. peltatus and R. floribundus.

The variety γ is a very remarkable plant, and may be a distinct sub-species, as the Rev. W. W. Newbould inclines to think. Professor Babington unites it with R. heterophyllus (Ann. Nat. Hist. ser. ii. Vol. XVI. p. 394), with which it agrees in the weak collapsing leaves; but in all other respects it approaches R. peltatus, or rather R. floribundus, and is very possibly only a state of that plant induced by growing in running water. In habit it closely resembles R. fluitans, but has the segments of the leaves shorter, much less rigid and less parallel, the stamens longer than the head of pistils, and the receptacle hispid.

SUB-SPECIES II.—**Ranunculus heterophyllus.** *Bab.*

PLATE XIX.

Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 393; and Man. Brit. Bot. ed. v. p. 6.
Batrachium heterophyllum, *Fries*, Sum. Veg. Scand. p. 140.
Ranunculus peltatus? "Schrank," *Boreau*, Fl. du Cent. de la Fr. Vol. II. p. 12.

Submerged leaves trifurcate, afterwards repeatedly bifurcate. Segments flaccid, collapsing into a pencil when drawn from the water. Floating leaves on long stalks, orbicular in outline, nearly flat, tripartite, with the sides of the segments next the petiole straight, sub-parallel, or forming a very acute angle with each other, so that only a very small portion is wanting to complete the circle. Segments inversely deltoid, the narrow sinus which separates them bounded by straight lines; the lateral segments bifid, and all toothed or lobed at the end. Flowers, when expanded, about $\frac{3}{4}$ inch in diameter. Petals wedge-shaped, obovate, about 9-veined, not contiguous. Stamens indefinite. Achenes half-obovate, often hispid at the tip.

In ponds and ditches. Apparently much less common and more local than R. peltatus.

England, Scotland. Perennial. Spring to Autumn.

Stem branched, floating, the extremity frequently rising out of the water. Stipules broad, membranous, whitish, with free rounded auricles. Submerged leaves dark green, with the middle primary segments less than the lateral ones. Peduncles about as long as the leaves opposite to which they spring, slender, narrowed underneath the flower, curved downwards at the base after flowering, the upper part remaining nearly straight. Petals twice as long as the calyx, with a very straight border to the nectary, white, yellow at the base, spreading like the rays of a star when the flower is fully expanded. Carpels as in R. peltatus, from which it differs in the submerged leaves collapsing when taken from the water, the floating leaves being more nearly a complete circle in outline, and the segments being bounded by straight lines rather than by curves. The crenatures at the tip much more deeply indented, and more acute at their apex. The peduncles less regularly arched throughout after flowering.

The name "heterophyllus" has been used for all the varieties of R. aquatilis, which have leaves of two kinds; but has not been adopted by modern authors as a specific name until restricted by Fries to the present form.

SUB-SPECIES III.—**Ranunculus Drouetii.** *Schultz.*

PLATE XX.

Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 391; and Man. Brit. Bot. ed. v. p. 6. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 42. *Boreau,* Fl. du Cent. de la Fr. Vol. II. p. 12.

Submerged leaves trifurcate, afterwards repeatedly bifurcate. Segments flaccid, collapsing into a pencil when drawn from the water. Floating leaves rarely produced, tripartite or ternate, the segments wedge-shaped, incised at the apex. Flowers ⅜ inch in diameter, or less. Petals oblanceolate, 5- to 7-veined, not contiguous. Stamens 5 to 10. Carpels half-obovate, inflated at the apex.

In ponds and ditches. Probably common.

England, Scotland. Perennial. Spring to Autumn.

Stem slender, slightly branched, floating. Stipules broad, membranous, whitish, with short, free, rounded auricles. Submerged leaves bright green, the lower ones shortly stalked, the upper sessile. The primary segments stalked; intermediate one much shorter than the others and directed downwards. Floating leaves stalked, very seldom produced, and soon decaying. Peduncles short, about as long as the leaves opposite to which they spring, slender, not narrowed, bent at the base after flowering, the upper part remaining nearly straight. Petals not much longer than the calyx, white, yellow at the base, spreading like the rays of a star. Carpels resembling those of R. heterophyllus, but smaller, more inflated at the apex, less strongly wrinkled and more hispid.

This sub-species differs from the last by being much more slender, and having smaller flowers; but some of the states of R. heterophyllus without floating leaves approach it very nearly.

SUB-SPECIES IV.—**Ranunculus trichophyllus.** *Chaix.*

PLATE XXI.

Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 390; and Man. Brit. Bot. ed. v. p. 5. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 23. *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 12.

Submerged leaves trifurcate, afterwards repeatedly bifurcate. Segments short, divaricate, comparatively rigid, not collapsing. Floating leaves very rarely produced, tripartite or ternate. Segments wedge-shaped, truncate, cut or toothed at the apex. Flowers ½ inch in diameter. Petals oblanceolate, 5- to 7-veined, not contiguous. Stamens 8 to 15. Carpels half-ovoid, compressed, not inflated at the apex.

In ponds and ditches; occasionally in brackish water. Probably common.

England, Scotland. Perennial. Spring to Autumn.

Stem rather slender, branched, floating. Stipules broad, membranous, whitish, with short, free, rounded auricles. Submerged leaves blackish-green, the lower ones shortly stalked, the upper sessile. The three primary segments not conspicuously stalked; intermediate one a little shorter than the others, and pointing in the same direction with them. Floating leaves? (only observed in a plant which seems to belong to this sub-species, collected near Chichester by the late Mr. Borrer, but of which I do not possess specimens) somewhat resembling those of R. heterophyllus, but not occupying nearly so great a part of a circle, and with the segments much narrower, not contiguous, separated by a broadly triangular sinus, or of 3 stalked wedge-shaped leaflets. Peduncles short, about as long as the leaves opposite to which they spring, rather stout, arched after flowering, but with the curvature greatest towards the base. Petals about half as long again as the calyx, white, yellow at the base, spreading like the rays of a star. Carpels resembling those of R. Drouetii, but more compressed, and much less inflated at the apex. Plant often slightly hispid.

This plant closely resembles the last, but is usually darker and more rigid in the foliage, larger in the flower, and has the carpels less inflated at the tip. I have seen specimens of R. trichophyllus named "R. circinatus," or its synonym "R. divaricatus," both by British and continental botanists; but the latter plant differs by its leaves being all in one plane, the peduncles longer and more slender, and the flower larger. R. radians (*Rev.*)=R. Godronii (*F. Schultz*) is rightly referred to R. trichophyllus by Professor Babington (Man. ed. v. p. 6).

Water Crowfoot.

French, *Grenouillette.*

It is the Βατραχιον τεταρτον of Dioscorides (ii. 206). Its handsome, showy flowers are very attractive in the ponds and ditches it frequents, sometimes covering the surface of the water. It has been remarked that in this plant we have an instance of the difference of form between leaves submerged in water and those which gain the surface, for underneath the water they differ considerably in form from their natural shape when floating on it. This species of Ranunculus does not seem to possess the poisonous and deleterious properties of its family. In the Linnean Transactions, vol. v. p. 19, Dr. Pulteney asserts that it is not only innoxious but nutritive to cattle, and capable of being converted to useful purposes in agricultural economy. In the neighbourhood of Kingswood, on the banks of the Avon, some of the cottagers support their cows and even horses almost entirely on this plant. A quantity is collected every morning, and brought in a boat to the water's edge, from which the cows eat it with great avidity; and so fond are they of this food, that they are obliged to be restricted as to quantity. One man kept five cows and one horse entirely on this plant, only half a ton of hay being consumed by them through the year, and that was during the time the ponds were frozen over. Pigs may also be kept on this plant, and require no other food until put up to fatten. This absence of acrid or poisonous qualities is by some accounted for in this species of Ranunculus from the fact of its growing in water, which may perhaps interfere with the development of the acrid principle.

SPECIES IV.—**RANUNCULUS BAUDOTII.** *Godr.*

PLATES XXII. XXIII.

Godr. in Mém. de l'Acad. de Nancy, 1839, Pl. XXI. Fig. 4. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 434. *Breb.* Fl. de Normandie, ed. iii. p. 6.

Submerged leaves petiolate or sessile, ellipsoidal or transversely ovoid in outline, divided into diverging comparatively rigid capillary segments, which spread upwards and downwards as well as laterally, and do not collapse on being drawn out of the water. Floating leaves (often present) alternate, reniform or sub-orbicular in outline, very slightly rounded at the basal margin, tripartite, occasionally ternate, with stalked leaflets. Segments or leaflets not approximate, inversely deltoid or wedge-shaped-obovate, deeply crenated or lobed at the tip. Stipules of the upper leaves broad, with free rounded auricles, those of the lower leaves narrow and almost entirely adnate. Peduncles narrowing upwards, very long. Petals about twice as long as the calyx. Stamens indefinite (usually), shorter than the head of pistils. Style conspicuous. Stigma ligulate. Achenes small, very numerous, closely packed in a shortly ovoid-conical head; their inner edge straight nearly to the tip, their outer edge convex. Receptacle elongate-conical, pointed, slightly hispid.

Var. α. *vulgaris.*

PLATE XXII.

Ranunculus Baudotii, *Bab.* Ann. Nat. Hist. ser. ii. Vol. XVI. p. 395; and Man. Brit. Bot. ed. v. p. 7. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 21. *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 10.

Stamens shorter than the head of pistils.

Var. β. *confusus.*

PLATE XXIII.

Ranunculus confusus (*Godr.*), *Bab.* Ann. Nat. Hist. ser. ii. Vol. XVI. p. 394; and Man. Brit. Bot. ed. v. p. 6. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 22. *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 10.

Stamens longer than the head of pistils.

In ponds and ditches of brackish water; β also in fresh water. Probably frequent along the coast throughout Britain, although Guillon ponds in Haddingtonshire is the most northerly locality yet recorded for α, and Duddingston Loch, near Edinburgh, for β.

England, Scotland, Ireland. Annual (certainly), or Perennial? Summer to Autumn.

Stem branched, floating. Stipules membranous, whitish; the upper ones rather broad, with short free rounded auricles, the lower ones narrower, entirely adnate. Submerged leaves more or less distinctly stalked, bright green, divided into short, firm, capillary segments; first trifurcate, with the central segment very much smaller than the others, afterwards bifurcate. Floating leaves on long stalks, the outline of the laminæ usually semicircular, tripartite, with deeply crenated or lobed segments, separated by a broadly triangular sinus, the basal margins slightly rounded; sometimes the floating leaves consist of three stalked wedge-shaped segments, deeply cut at the apex. Upper internodes of the stem at first very short, so that the peduncles are crowded together at the top of the stem while flowering. Peduncles thick, tapering considerably upwards, curved downwards after flowering, the curvature greatest towards the base; often twice or thrice as long as the leaves opposite to which they spring, when the latter are of the submerged form; but when the peduncles spring from floating leaves, the difference in length is not so great. Petals about twice as long as the calyx, obovate, 7- to 9-veined, white with a yellow base, spreading like the rays of a star when fully expanded. Achenes generally in many more rows (often ten or twelve) than in any of the previous species, and, therefore, much more numerous, amounting even to as many as 50 or 100 carpels on each receptacle, pale yellowish olive, with the inner side straight from the base for about two-thirds, and thence more or less convex to the apiculus formed by the persistent base of the style, the outer side curved, usually much rounded towards the apex, so that the carpel may be termed inflated. Receptacle elongate, with the hairs much more distant than in R. aquatilis.

There can be little difficulty in distinguishing this plant from R. aquatilis on account of the longer peduncles; much more numerous achenes, in about twice or more times as many rows, very closely packed in a head, which tapers somewhat towards the apex; the longer style, and the flattened stigma.

R. confusus appears to be simply a variety, as there is no character by which it can be separated, except that the stamens are longer than the head of pistils. The achenes vary in shape quite independently of the length of the stamens; and the narrowing of the apex of the achene, which is given as one of the distinguishing features of R. confusus, is quite as often seen in plants which have the normal form of R. Baudotii in other respects. Indeed, the inflated and attenuated form of achenes may be met with on the same individual.

A small form, without floating leaves, with the peduncles not much exceeding the submerged leaves, approaches closely the habit of R. trichophyllus, and in the dried state is occasionally difficult to distinguish from that.

R. marinus (Fries), which occurs in the Baltic, but has not been observed in Britain, is a variety, or perhaps a sub-species, of R. Baudotii, distinguished by the apparently constant absence of floating leaves, by having the dissected leaves sessile with fewer segments, and the achenes more convex on the inner side near the tip, so that the persistent base of the style forms an apiculus which is nearly central on the apex of the carpel; but I have seen examples of R. Baudotii and R. confusus with carpels precisely similar to those of Fries' specimens of his Herb. Norm. in the Hookerian Herbarium. Fries describes the achenes as keeled; but R. Baudotii and, indeed, most of the other species of this section, are liable to have a false keel produced by the shrinking of the pericarp in drying. This sub-species is mentioned here, as it is not at all unlikely to occur in brackish water on the Scottish coast.

Baudot's Water Crowfoot.

SPECIES V.—RANUNCULUS TRIPARTITUS. *D. C.*

PLATE XXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. II. Fig. 4574.
Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 399; and Man. Brit. Bot. ed. v. p. 7. *Gr. & Godr.* Fl. de la Fr. Vol. I. p. 20. *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 9. *Coss. & Germ.* Fl. des Env. de Paris. ed. iii. p. 12.

Submerged * leaves (not seen in Britain) stalked, the upper ones sessile, ellipsoidal or transversely ovoid in outline, divided into diverging flaccid capillary segments, which spread upwards and downwards as well as laterally, and collapse on being drawn out of the water. Floating * leaves alternate, semicircular or sub-orbicular in outline, very slightly rounded, or nearly straight at the basal margins, tripartite; the segments not approximate, inversely deltoid or wedge-shaped, deeply crenate at the tip. Stipules short and broad, the free rounded auricles as large as or larger than the adnate portion. Peduncles slender, not tapering upwards, about as long as the leaves opposite to which they spring. Petals scarcely exceeding the calyx. Stamens 5 to 10, longer than the head of pistils. Style rather long and slender. Stigma ligulate. Achenes small, inflated, few, loosely packed in a sub-globular head, their inner edge convex at the tip, the outer edge convex throughout. Receptacle globular, very slightly hispid.

Var. α. *fluitans.* Godr.

Lower leaves divided into capillary segments.

Var. β. *terrestris.* Godr.

Without capillary divided leaves.

Very rare; and only the variety β has occurred in this country, where it has been found on damp ground and in ditches in the neighbourhood of Esher in Surrey, near Haverfordwest in Pembrokeshire, and in Cornwall. Marked in Mr. Moore's list of Irish plants.

England, Ireland. Annual (certainly), or Perennial? Summer, Autumn.

Stem 2 to 6 inches long, branched in the larger examples, with

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* The terms submerged and floating are here used to express the two kinds of leaves; for those described as floating in this species are found even under water.

the stipules much less adnate than in any of the preceding. Leaves occupying from half to three-quarters of a circle; divided more than half-way down into 3 segments, of which the centre one has usually 3 crenatures at the apex; the lateral ones 2-cleft, with about 4 crenatures; sinus between its segments broadly triangular. Flowers very small, the petals not contiguous, scarcely longer than the calyx, oblanceolate-oblong, about 3-veined, white, slightly tinged with pink, yellowish at the base. Achenes few (6 to 12), yellowish olive, with the inner side straight from the base for about two-thirds, and thence convexly curved to the conspicuous apiculus formed by the persistent base of the slender style, which is thus placed nearly in the centre of the apex of the carpel.

I have seen specimens in the Hookerian Herbarium, which were raised by the late Mr. Borrer from the seed of the Esher plant. These had the lower leaves cut into fine linear segments, such as often occur in the last two species between the floating and dissected leaves.

The large stipules almost free from the petioles, the absence of divided leaves and carpels, with the apiculus in the centre of the apex, distinguish this from all the preceding.

Three-lobed Water Crowfoot.

SPECIES VI.—RANUNCULUS LENORMANDI. *Schultz.*

PLATE XXV.

F. Schultz in Flora, oder Bot. Zeit. 1837, p. 727. *Godr.* Monog. p. 7. f. 2. *Boreau*, Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 9. *Brebisson*, Fl. de Normandie, ed. iii. p. 7. *Lloyd*, Fl. de l'Ouest de la Fr. p. 4. *Bab.* Man. Brit. Bot. ed. ii. p. 6.

R. cœnosus, *Gr.* & *Godr.* (non *Guss.*) *Bab.* Ann. Nat. Hist. ser. ii. Vol. XVI. p. 403; and Man. Brit. Bot. ed. v. p. 8. *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 19.

None of the leaves dissected into capillary segments, but all of one form, alternate with long petioles, reniform or sub-orbicular; cordate at the base, with 3 roundish obovate lobes, seldom reaching half-way down; lobes with a few large shallow crenatures at the apex, or entire. Stipules short and broad, the free rounded auricles as large or larger than the adnate portion. Peduncles rather slender, not narrowed upwards, usually equalling or exceeding in length the leaves opposite to which they spring. Flowers ½ inch in diameter. Petals twice as long as the calyx. Stamens 8 to 10, rather longer than the head of pistils. Style short and thick. Achenes small, slightly inflated, rather numerous, closely packed in a globular head; their inner edge very convex towards the apex, lower edge convex throughout. Receptacle globular, glabrous.

In ditches and wet places. Rather rare, but pretty widely distributed. It has occurred in Cornwall, Devon, Hants, Sussex, Kent, Surrey, Somerset, Glamorgan, Pembroke, Cardigan, Staffordshire, Leicester, York, Lancashire, Dumfries, and Lanarkshire, and, probably, will be found in other counties.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Stem branched at the base, creeping in the mud; the upper portion floating when covered by water. Leaves very variable in size, from ½ inch to 1½ inch across, occupying from half to three-quarters of a circle; the central lobe rounded at the end with 3 broad very shallow crenatures; the lateral lobes slightly bi-lobed, with two or three crenatures in each of the subdivisions. Flowers varying a little in size, but always larger than in the preceding or following species. Petals oblanceolate-oblong, 5- to 7-veined, white with a tinge of yellow at the base, spreading like the rays of a star. Achenes pale-yellowish olive, slightly attenuated at the tip, which passes insensibly into the apiculus formed by the persistent base of the style, which, from the convexity of the upper margin of the carpel, is nearly central.

The shortly obovate rounded lobes of the leaves, and larger flowers, distinguish this from the preceding species, which it resembles in habit. The carpels are also much more numerous and less inflated at the tip.

I have not seen the leaves of this species opposite, as in the next, nor with the dark marking so common in that plant.

Lenormand's Water Crowfoot.

SPECIES VII.—**RANUNCULUS HEDERACEUS.** *Linn.*

PLATE XXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. II. Fig. 4573.

Bab. Ann. Nat. Hist. ser. ii. Vol. XVI. p. 404; and Man. Brit. Bot. ed. v. p. 8. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 12. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 19. *Boreau,* Fl. du Cent. de la Fr. Vol. II. p. 9. *Brebisson,* Fl. de Normandie, ed. iii. p. 7. *Lloyd,* Fl. de l'Ouest de la Fr. p. 5.

R. cœnosus, *Guss.* Prod. Suppl. 187; Syn. Vol. II. p. 39. *Brebisson,* Fl. de Normandie, p. 7.

None of the leaves dissected into capillary segments, but all of one form, opposite or more rarely alternate, stalked, broadly reniform, sub-cordate at the base, with 5 more or less distinctly marked entire, bluntly triangular or rounded lobes. Stipules longer than broad, almost entirely adnate. Peduncles rather slender, not exceeding and usually much shorter than the leaves, from the axil of which they spring (or when the latter are alternate, opposite to

which they spring). Flowers about ¼ inch in diameter. Petals as long as or very slightly exceeding the calyx. Stamens 6 to 10, a little longer than the head of pistils. Style short. Achenes rather small, very much inflated at the tip, rather numerous, closely packed in a globular head; their inner edge nearly straight throughout, the outer edge convex nearly to the tip, which is very obtuse, almost truncate. Receptacle globular, glabrous.

In ditches and wet places. Common, and universally distributed throughout Britain.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Stem branched, creeping in mud, the upper portion floating when covered by water. Leaves from ½ inch to 1 inch across, rarely occupying so much as a semicircle. When growing on mud, the lobes are commonly triangular and quite entire; but when in water of some depth, they float on the surface, and have the lobes completely rounded, and occasionally slightly emarginate, when it appears to be R. cœnosus of Gussone. Flowers very small. Petals white, tinged with yellow at the base, scarcely exceeding the calyx, narrowly oblong-oblanceolate, 3-veined, spreading like the rays of a star. Achenes pale-yellowish olive, very much inflated at the tip, where the persistent base of the style forms an apiculus, which is quite on the upper side of the carpel.

When this plant grows in mud, the entire triangular lobes of the leaves distinguish it from all the other Batrachian Ranunculi; and when found in water, the only one with which it can be confounded is the preceding, from which it differs by having the leaves mostly opposite, broader in proportion to their length, with much shallower and not at all obovate lobes, much more adnate stipules, shorter peduncles, flowers half the size, carpels much more inflated at the apex, and having a lateral and not a central apiculus. The leaves of R. hederaceus have very frequently dark markings, which I have never observed in R. cœnosus.

I have no doubt that the floating state of this plant is that which Gussone has named R. cœnosus. He does not describe the peculiarity of the carpels, nor of the stipules; but he mentions the petals as scarcely exceeding the calyx. I possess a specimen from Sicily, collected by MM. E. and A. Huet de Pavillon, to which the name of R. cœnosus is given, and which is certainly the floating form of R. hederaceus; and I have also seen one from Professor Gasparini in Professor Babington's herbarium, similarly named, which is also the floating form of R. hederaceus. M. Brebisson's plant is also identical with this.

Ivy-leaved Water Crowfoot.

French, *Renoncule à Feuilles de Lierre.*

The whole of the preceding Batrachian Ranunculi are considered as forming a single species by Mr. Bentham;* and Dr. Walker Arnott is apparently inclined to take the same view, although he gives specific descriptions of six. Is not this carrying the idea of super-species to an extreme length? For example: between R. circinatus and any of the other species there is not to be seen a single intermediate form (which could give an excuse for linking them together), among many hundred specimens of Batrachia from all parts of the world, contained in the Hookerian Herbarium. By intermediate forms I here intend those which a practised eye would feel some hesitation in referring to either of two allied species or sub-species, — such as we find amongst the fruticose Rubi and Hieracia.

SUB-GENUS II.—EU-RANUNCULUS.

Sepals and petals 5, the latter usually with a scale over the nectary. Style short. Carpels without distinct transverse ridges.

Land or marsh plants, with the leaves very seldom divided into capillary segments. Stipules inconspicuous, adnate. Peduncles not reflexed after flowering, usually terminal, and arranged in an irregular cyme. Petals yellow in the British species.

SPECIES VIII.—RANUNCULUS SCELERATUS. *Linn.*

PLATE XXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XI. Fig. 4598.

Stem erect, branched, thick and hollow, furrowed. Lower leaves stalked, reniform or pentagonal in outline, 3-cleft, with lobed segments, lobes crenated. Upper leaves nearly or quite sessile, tripartite; segments tripartite, elliptical, or strap-shaped, nearly entire. Petals little longer than sepals. Nectary without a scale. Head of fruit oblong or oblong-ovoid, closely packed. Achenes small, very numerous, slightly compressed, their sides faintly transversely wrinkled in the middle, with a furrow on the back instead of a keel, and an extremely minute apiculus at their apex. Receptacle narrowly oblong, slightly hairy.

In muddy ditches and wet places. Common throughout Britain, though it becomes less frequent in the northern part of the kingdom.

England, Scotland, Ireland. Annual or Biennial.
Summer and Autumn.

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* Since this paragraph was written, the first number of the illustrated edition of Mr. Bentham's Handbook has appeared, and in it he recognizes R. hederaceus (including hederaceus and Lenormandi) as a species distinct from R. aquatilis.

Root of numerous white fibres. Stem 8 inches to 2 feet high, in the larger specimens often as thick as a man's finger at the base, and branched at the top so as to form an irregularly corymbose cyme. Lower leaves glabrous, more or less deeply 3-cleft, the lateral segments again divided, though less deeply, and both the primary and secondary segments with a few lobes, which are again crenated. Middle leaves on shorter stalks, and more deeply divided than the lower leaves; the uppermost of all, or bracts, as they may be termed, with scattered hairs on the narrow, sub-entire segments. Peduncles furrowed. Flowers about ¼ inch across. Sepals reflexed, hairy exteriorly. Petals obovate, pale yellow, about as long as the head of pistils. Achenes pale-yellowish olive, compressed, their upper edge slightly concave near the base, and slightly convex towards the tip, the lower nearly semicircular, each side with a faintly-wrinkled patch in the middle. Plant yellowish green, shining.

This plant cannot possibly be confounded with any other British species, and, as Professor Babington observes, approaches more nearly to the Batrachian section of the genus than any of the other true Ranunculi, not only in the wrinkled carpels and the absence of a scale to the nectary, but also in habit, as, when the plant grows in water (before the flower-stalk is produced), the radical leaves often float on the surface, and remind the observer of those of R. aquatilis.

Celery-leaved Crowfoot.

French, *Renoncule scélérate.* German, *Gifthahnenfuss, Froscheppich.*

The Latin surname of this plant attributes to it a dozen evil qualities. In consequence of its chosen home in dirty or shallow waters, in muddy drains or dykes, it is called polluted, defiled, or dirty Crowfoot. Then it is "scelerate," because it is acrid, nipping, or biting; if chewed, it inflames the tongue; even the distilled water of it is intensely acrimonious; and as it cools it deposits crystals which are very insoluble and have the curious property of being inflammable; yet, with all this acridity, if the plant be boiled and the water thrown off, it is not unwholesome, and the peasants of Wallachia eat it as a vegetable. The juice is so irritant, that if applied to the skin it will readily produce blisters. Mr. Francis says that he saw a begging impostor producing inflammation by this means, in order to excite compassion.

SPECIES IX.—RANUNCULUS OPHIOGLOSSIFOLIUS.

Vill.

PLATE XXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXI. Fig. 4613.

Stem erect, branched, hollow, furrowed. Lower leaves stalked, broadly ovate, faintly serrate; upper leaves nearly or quite sessile, narrowly elliptical. Petals longer than the sepals. Nectary with a small scale narrower than the claw. Head of fruit globular, closely packed. Achenes small and numerous, compressed, their sides with small raised points, or tubercles; apiculus very small. Receptacle slightly clavate, glabrous.

Locally abundant in "St. Peter's Marsh," Jersey. This is half-way between St. Helier's and St. Aubin's, and is best known in the island by the less dignified appellation of "Goose Green."

Channel Islands. Annual. Summer.

Root of numerous whitish fibres. Stem slender, much branched in large examples, with a general tendency to become irregularly dichotomous. Lowest leaves very broadly cordate- or rhomboid-ovate; those of the stem becoming narrower and more shortly stalked in proportion as they are placed higher up on the stem. Peduncles furrowed, opposite the leaves in unbranched specimens. Flowers scarcely a quarter of an inch across. Sepals spreading, glabrous. Petals obovate, pale yellow, a little longer than the head of pistils. Achenes reddish brown, lenticular, compressed; their upper edge slightly convex, the lower nearly semicircular, faintly tuberculate on the sides. Plant yellowish green, glabrous, or with distant adpressed hairs towards the upper part.

This plant presents little resemblance to any of our species, except the following, from which, however, the tuberculated carpels readily distinguish it. When growing the habit of the plant is much more that of R. sceleratus than of R. Flammula.

Adder's-tongue-leaved Spearwort.

SPECIES X.—RANUNCULUS FLAMMULA. *Sm.*

PLATES XXIX. XXX.

Rootstock not stoloniferous. Stem decumbent and usually rooting at the base; the upper portion erect or procumbent, slightly branched, hollow, furrowed. Leaves varying from ovate to linear, somewhat acute, faintly and remotely denticulate or entire; the earliest and those of the barren shoots broadest and with the longest stalks, the upper ones sessile. Peduncles furrowed. Flowers rather small. Nectary with a rudimentary scale. Head of fruit globular, loosely packed. Achenes rather small, not compressed, appearing smooth to the naked eye, very obscurely margined, and not at all winged; apiculus very small.

SUB-SPECIES I.—Ranunculus eu-Flammula.

PLATE XXIX.

R. Flammula, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. X. Fig. 4945.

R. Flammula, *Linn.* Species Plant. p. 772. *Fries,* Summ. Veg. Scand. p. 142. *Koch,* Syn. Fl. Germ. et Helv. p. 434. *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 14. *Godet,* Fl. du Jura, p. 12.

R. Flammula, var. *a,* Auct. plurimum.

Stem erect, ascending or prostrate, with the internodes straight (not regularly arched), usually rooting only at the lower nodes. Apiculus of the ripe achenes about one-eighth of the length of the whole, obtuse.

Var. *α. sub-erectus.*

Stem decumbent and rooting only at the very base, terminal portion erect.

Var. *β. pseudo-reptans.*

R. reptans, *Thuil.* (non *Linn.*)

Stem procumbent, rooting at the nodes; the apex alone ascending. Leaves usually narrower than in var. *α*, and the whole plant smaller.

In ditches, marshes, and wet pastures. Very common throughout Britain. Var. *β* much less frequent than var. *α*.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Root of white simple fibres. Stem about 1 to 2 feet high in var. *α*, 3 to 9 inches in var. *β*. Leaves very variable in shape: those at the bottom of the stem broadest, varying from broadly ovate to narrowly elliptical, lanceolate; stem leaves with the base of the petiole amplexicaul; upper leaves sessile, sub-amplexicaul, usually ligulate. Peduncles slightly pubescent. Flowers in an irregularly corymbose cyme in var. *α*, or nearly solitary in var. *β*. ½ inch to ¾ inch in diameter. Petals obovate, pale yellow. Achenes roundish, greenish olive, appearing finely granulated under a powerful lens, with an extremely short, blunt apiculus.

The perennial root, the stem decumbent at the base and much firmer in texture, the more glaucous colour, larger flowers, and smooth green achenes, are sufficient distinctions between the broader forms of the present plant and the preceding.

SUB-SPECIES II.—**Ranunculus reptans.** *Linn.*

PLATE XXX.

R. Flammula *β*, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. X. Fig. 4595.
R. reptans, *Linn.* Species Plant. p. 772. *Fries*, Summ. Veg. Scand. p. 142. *Koch*, Syn. Fl. Germ. et Helv. p. 434. *Godet*, Fl. du Jura, p. 12.
R. filiformis, *Mich.* Fl. Bor. Am. Vol. I. p. 320.
R. Flammula, var. *δ*, *Sm.* Eng. Fl. Vol. III. p. 45.
R. Flammula, var. *β*, Auct. plurimum.

Stem procumbent, filiform, with arched internodes, rooting at the nodes. Apiculus of the ripe fruit nearly one-fourth the length of the rest of the achene, sub-cylindrical, with the extreme point reflexed.

Sandy shores of Loch Leven, near Kinross.

Scotland. Perennial. Summer, Autumn.

Plant producing a tuft of a few narrowly-elliptical, acute leaves on long petioles. Stems threadlike, with a few strap-shaped or elliptical-linear leaves. Flowers about ⅜ inch in diameter. Achenes about half or two-thirds of the usual size of those of R. eu-Flammula, with the beak much longer.

Lesser Spearwort.

French, *Renoncule Flammette, Petite Douve.*

The specific name *Flammula*, the diminutive of *flamma*, is given to this plant as it causes a little flame or inflammation on the skin. The leaves bruised and applied to the surface will raise a blister in about half an hour. This is a sore which is difficult to heal, and consequently should only be used when a lasting vesication is required. Dr. Withering recommends the distilled water of R. flammula as preferable to any other means for producing instant vomiting in cases of poisoning, without exciting the painful contortions resulting from the administration of white vitriol for a like purpose. Lightfoot describes an ingenious but simple method of using the bruised leaves as a blister; he says that, in the Scottish Islands, they fill a limpet-shell with the bruised leaves and bind it on the part, the cup form of the shell neatly defining the place of the blister.

SPECIES XI.—RANUNCULUS LINGUA. *Linn.*

PLATE XXXI.

Reich, Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. X. Fig. 4597.

Rootstock creeping, stoloniferous. Stem erect, emitting roots at a few of the lower joints, branching above, hollow, furrowed. The earliest leaves, and those of the barren shoots on long stalks, ovate or oblong-ovate; those on the flowering stem sessile, linear-lanceolate, very acute, faintly and remotely denticulate or nearly entire. Peduncles not furrowed. Flowers very large. Nectary with a rudimentary scale. Head of fruit globular, closely packed. Achenes large, numerous, much compressed, margined, the margin forming a wing on the upper edge, the apex narrowed into a short, slightly recurved beak, with a triangular profile, nearly half the length of the rest of the mature carpel.

In ditches and by the sides of ponds. Sparingly distributed in England and Scotland, as far north as Morayshire. It is most frequent in the fenny districts of England.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Root creeping in the mud and producing stolons, which, in the end of the year, send up shoots with long stalked, very broadly ovate leaves, often slightly cordate at the base. Stem 2 to 4 feet high, and stout in proportion; the upper part branched in an irregularly dichotomous manner, so that the flowers form a somewhat corymbose cyme. Leaves embracing the stem by their largely dilated bases (rudimentary stipules); the leaves themselves attenuated at each end, 6 inches to 1 foot long, and ½ inch to 1 inch broad. Peduncles with adpressed hairs. Flowers from 1 to 2 inches in diameter. Sepals spreading, ovate, concave, slightly strigose. Petals obovate or roundish, deep rich yellow, glossy on the inside. Head of fruit ½ inch in diameter, pale olive. Achenes appearing finely granulated under a powerful lens; their margin on the upper side with a membranous wing, which is continued beyond the apex into the beak, which is slightly reflexed at the point. Whole plant nearly glabrous, or with adpressed hairs.

This species has been sometimes confounded with R. Flammula; but, irrespective of the difference in size, the beak and margin to the fruit render their determination an easy matter, when the plant is in a state in which this can be examined. The stem leaves are also much more gradually tapered and acute than those of R. Flammula, the flowers of a deeper yellow, and the whole plant of a brighter green.

Greater Spearwort.

It is an acrid plant, like most of its tribe, and its poisonous characters are not modified by its growing in moist or wet places.

SPECIES XII.—RANUNCULUS AURICOMUS. *Linn.*

PLATE XXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. III. Tab. XII. XIII. XIV. Fig. 4599.

Rootstock short, not creeping, stem ascending. Radical leaves stalked, reniform or roundish in outline, varying from crenate-serrate to tripartite with the divisions deeply cut. Stem leaves quite sessile, divided to the base into ligulate-linear segments, which in the uppermost leaves or bracts are quite entire. Peduncles downy, not furrowed. Sepals hairy, applied to the petals, which have no scale covering the nectary. Head of fruit globular, loosely packed. Achenes a little compressed, smooth to the naked eye, slightly margined, the persistent style forming a cylindrical, tapering, recurved beak. Receptacle with stalk-like projections, to which the achenes are affixed.

In woods and moist shady places. Common in England, less so in Scotland, where it has not been observed farther north than the county of Moray on the east, and the neighbourhood of Glasgow on the west.

England, Scotland, Ireland. Perennial. Spring.

Plant often growing in tufts, with numerous stems, very slightly branched above, curved at the base, then erect or inclined. Radical leaves numerous, and varying much in shape and division on the same individual. Stem leaves only placed at the points where branches are given off, with 5 to 9 narrow segments; those which are situated lowest on the stem often cut, or furnished with projecting lobes; the uppermost leaves quite entire, and narrower. Flowers when perfect often 1 inch in diameter; but very frequently several of the petals are abortive or deformed. In Scotch specimens I have very seldom found the flowers perfect; but in Kent and Surrey they are generally so. Achenes slightly granulated under a lens, and often with a few short hairs on the surface; beak at first revolute, but only curved when the fruit is mature. Receptacle very curious, having projecting cylindrical processes about $\frac{1}{20}$ inch long, a character first pointed out in the last edition of Professor Babington's Manual of British Botany. Plant bright yellowish green, almost glabrous, having only very short remote hairs, except on the peduncles.

Beak of the fruit longer than in most of the following species, from which it may be readily distinguished by the absence of a scale over the nectary.

Wood Crowfoot. Golden-haired Crowfoot, or Goldilocks.

The specific name *Auricomus* is derived from *aureus*, golden, and *coma*, a lock of hair. It differs remarkably from the rest of the Ranunculus tribe, in that it is not at all acrid; and it has been called Sweet Wood Crowfoot.

SPECIES XIII.—RANUNCULUS ACRIS. *Linn.*

PLATE XXXIII.

Rootstock short, not enlarged. Stem erect. Radical leaves stalked, pentagonal in outline, tripartite or 3-cleft, with the segments more or less deeply cut and toothed. Lower stem leaves similar, but on shorter stalks; uppermost ones sessile, with narrower, often entire segments. Peduncles hairy, not furrowed. Sepals hairy, applied to the petals, which have a conspicuous scale over the nectary. Head of fruit globular. Achenes compressed, smooth to the naked eye, conspicuously margined, and terminated by a short, more or less curved beak. Receptacle glabrous.

SUB-SPECIES I.—**Ranunculus eu-acris.**

PLATE XXXIII.

R. acris, *Jord.* Obs. sur Pl. Nouv. et Crit. de la Fr. Frag. VI. p. 15.

Rootstock short, oblique. Radical leaves with the primary segments divided into secondary ones by incisions, which reach at least half-way down to the base; secondary segments at least twice as broad as long, with a few large tooth-like lobes. Stem and leaves with adpressed hairs, except at the base of the former and on the stalks of the latter, where they are most commonly spreading. Petals broadly obovate, wedge-shaped at the base; nectary scale about as broad as long.

Var. α. *Steveni.*

R. Steveni, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XVII. Fig. 4605.
R. Steveni, "Andrz." *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 15.

Stem with scattered hairs at the base. Segments of the radical leaves not overlapping each other. Beak of the achene not half the length of the remaining part of the carpel, with a curved point, which disappears when the fruit is perfectly ripe.

Var. β. *vulgatus.*

R. vulgatus, *Jord.* in *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 15.

Base of the stem and petioles densely clothed with very numerous spreading or reflexed fulvous hairs. Segments of the radical leaves overlapping each other. Beak of the achene scarcely half as long as the remaining part of the carpel, with a hooked point, which is usually persistent.

? Var. γ. *rectus.*

R. acris, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XVII. Fig. 4606.
R. rectus, "Bauh." *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 15.

Hairs few, all adpressed. Segments of the radical leaves not overlapping each other. Beak of the achene about half as long as the rest of the carpel, slightly curved, "disappearing at maturity." (*Boreau.*)

In meadows and pastures, and on mountains. α and β very common throughout the kingdom; γ on Lochnagar, Aberdeenshire, and probably in other places.

England, Scotland, Ireland. Perennial. Early Summer to Autumn.

Rootstock thickened, obliquely creeping for a short distance (very short and almost perpendicular in γ). Stem erect, 1 to 2 feet high, except when growing on mountains, when it is much shorter. Upper part of the stem branched, forming an irregular cyme. Leaves varying much in the degree of incision and the breadth of the lobes. Flowers $\frac{3}{4}$ inch to 1 inch in diameter. Achenes lenticular, brown when ripe, appearing finely granulated only when examined under a powerful lens; beak at first curved at the end but this portion is very often deciduous.

This is the only sub-species of R. acris of which I have seen British specimens. The Rev. W. W. Newbould, however, believes that he has seen in Yorkshire R. Boræanus, which is a second sub-species, of which there is a very good figure in Reichenbach's Icones Floræ Germanicæ et Helveticæ, Vol. III. Ran. Tab. XVI. *bis*, Fig. 4606, under the name of R. acris. Descriptions of it will be found in Jordan's Obs. Frag. VI. p. 19; and Boreau's Flore du Cent. de la Fr. ed. iii. p. 15. This plant has the rootstock not at all creeping, but very short and perpendicular; the leaves are much more deeply divided, the segments and ultimate lobes nearly linear in outline. The plant is also much less hairy, and the hairs are all adpressed even at the bottom of the stem. The petals are narrower, more wedge-shaped at the base, and have the nectary scale longer than broad. Var. γ (rectus) of R. eu-acris, approaches this plant in several important features, as in the rootstock being scarcely creeping, and the rather wedge-shaped petals, narrow nectary scale, and adpressed scanty hairs; but the leaves are much less finely cut, and the beak of the fruit much longer. Perhaps a larger series of specimens than I have been able to examine might connect these two plants. As far as I have observed, the receptacle of R. eu-acris becomes very decidedly clavate in drying; but in the few specimens of R. Boræanus which I have seen, it remains cylindrical. This may, however, be merely accidental.

A third sub-species, R. Friesianus (Jordan), occurs on the Continent, but I have found nothing like it amongst British examples of R. acris. This is more hairy than even the var. vulgatus of R. eu-acris, and has the root leaves much less divided, closely resembling those of the continental R. lanuginosus; and the stem leaves, similar in shape to the root leaves, are more numerous.

Upright Meadow Crowfoot. Buttercup, or Kingcup.

German, *Wiesenranunkel, Kleine Butterblume.*

Acrid by pre-eminence, this favourite flower grows everywhere; and although its bright colour and hardy growth render it familiar to everyone, care must be had to its irritating and poisonous qualities. It is said that even pulling up the plant with bare hands and carrying it some distance has produced inflammation in delicate skins. We know of foolish children who having eaten the bright yellow flowers and green leaves were made extremely ill thereby. Cattle in general will not feed on it; but sometimes, when hungry, they have been turned into a field of buttercups, and having eaten them, their mouths have become sore and blistered. According to Linnæus, cows, horses, and pigs refuse it, but goats and sheep will eat it. When made into hay its noxious qualities are lost. Poetically, the associations of this plant are numerous. An old author introduces it as emblematical of the manhood of months: — "June is drawn in a mantle of dark-green grass, and upon his head a garland of bents, kingcups, and maidenhair."

Another more modern author says,—

"Here's a kingcup of gold brimming over with dew,
To be kissed by a lip just as fresh as its own."

Gay, the poet, tells us,—

"Fair is the kingcup that in meadow blows."

In the "Shepherd's Oracles" we are told it was worn by lovers at betrothing time, and its golden colour was dedicated to Hymen in more classical history. Old Quarles says,—

"Love-sick swains
Compose rush-rings and myrtle-berry chains,
And stuck with glorious kingcups in their bonnets,
Adorn'd with laurel slips, chaunt their love sonnets."

A variety of this plant has become double, and long been an inhabitant of gardens under the name of Bachelor's Buttons; in French, *Bouton-d'Or*.

SPECIES XIV.—RANUNCULUS REPENS. *Linn.*

PLATE XXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XX. Fig. 4610.

Rootstock short, not enlarged. Stem decumbent, with creeping scions or runners. Leaves stalked, triangular-ovoid in outline, ternate or biternate, the middle leaflet almost always, and the side ones occasionally stalked, 3-cleft, with the segments incise-serrate. Uppermost leaves sessile, with narrowly elliptical or strap-shaped usually entire segments. Peduncles hairy, furrowed. Sepals hairy, applied to the petals, which have a conspicuous scale over the nectary. Head of fruit globular. Achenes compressed, smooth to the naked eye, conspicuously margined, with a straight or slightly-curved tapering beak. Receptacle slightly hairy.

Hedge-banks, river-sides, meadows, and cultivated ground. Very common throughout Britain.

England, Scotland, Ireland. Perennial. Summer.

Rootstock very short, oblique, emitting numerous thick fibres. Primary stem sub-erect, 8 inches to 2 feet high; runners produced about the time when the primary stem flowers, and throwing up ascending flowering shoots later in the year. Leaves variable in the shape of the segments and in the depth of their divisions. Flowers 1 inch or more in diameter, bright yellow, the petals less spreading than in the previous species. Achenes lenticular, brown when ripe, much compressed, appearing finely granulated under a lens; beak about half the length of the rest of the carpel. Whole plant more or less hairy, the hair generally spreading, except upon the young leaves and peduncles. In moist, shady places the plant is often robust, the branches ascending instead of creeping and rooting, and the stems less hairy.

R. Caleyanus (Don, Gardener's Dictionary, Vol. I. p. 37) is described as having the calyx reflexed. It is said to be native near London, in dry places, particularly in the late Mr. Caley's garden at Bayswater. It is probably only a form of R. repens; but Don is the only botanist who appears to have met with it.*

Creeping Crowfoot.

It is the Cuckoo-bud of Shakespeare, so called from its early and bright appearance in the spring, accompanying the arrival of the cuckoo:—

"When daisies pied and violets blue,
And *cuckoo-buds* of yellow hue,
Do paint the meadows with delight."

It is also called Gold-cups, Gold-balls, and Mary-buds, sometimes improperly Buttercup. Like others of its family, it is acrid and irritant.

SPECIES XV.—**RANUNCULUS BULBOSUS.** *Linn.*

PLATE XXXV.†

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XX. Fig. 4611.

Rootstock resembling a corm. Stem erect or ascending, slightly branched. Leaves ovoid in outline; the radical and lower stem leaves stalked, ternate, with 3-cleft segments, or biternate; the middle leaflet with a longer stalk than the side ones, which are frequently sessile, all more or less deeply cut, lobed, or crenate-serrate; upper leaves sessile, with narrower segments having a few strap-shaped lobes. Peduncles hairy, furrowed. Sepals hairy, reflexed. Petals with a conspicuous scale over the nectary; scale widest at the top, which is emarginate and as broad as the claw of the petal. Head of fruit globular-ovoid. Achenes compressed, smooth to the naked eye, conspicuously margined, with a short, broad, hooked beak. Receptacle hairy.

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* The Plate of R. repens is E. B. 516, with additional dissections drawn by Mr. J. E. Sowerby.

† The Plate is E. B. 515, with additional dissections drawn by Mr. J. E. Sowerby.

In meadows, pastures and downs. Very common in England and the south of Scotland; but not certainly known to occur in the latter country north of the Caledonian Canal. This species loves a drier situation than the last two, which makes it prefer chalky and gravelly soils.

England, Scotland, Ireland. Perennial. Spring and
Early Summer.

Root of thickened fibres. Rootstock enlarged into a corm resembling that of a Crocus, and varying from the size of a large pea to that of a walnut, clothed with the expanded bases of the leaf-stalks. Stem 6 to 18 inches high, solitary, or 2 or 3 from the same corm, corymbosely branched in the upper portion, so as to form an irregular cyme. Leaves very variable in the shape of their segments and the depth of their divisions; but the middle leaflet has a longer stalk and the ultimate divisions are more obtuse than in R. repens. Flowers often 1 inch or more in diameter, rich yellow in colour, paler externally as in the allied species. Sepals pale yellowish, hairy without and smooth within, applied to the petals for about one-fourth of their length, then suddenly reflexed, their tips in contact with the peduncle, which is usually long. Petals broadly obovate, with a wedge-shaped base. Achenes lenticular, brown when ripe, much compressed, appearing finely granulated under a lens; beak much hooked, scarcely one-fourth the length of the rest of the carpel. Whole plant of a lively green, more or less pilose, the hairs adpressed or slightly patent.

Bulbous-rooted Crowfoot.

French, *Renoncule Bulbeuse.* German, *Der Zwiebelwurzelige Hahnenfuss.*

Also called indiscriminately by the people, Kingcup, Buttercup, Cuckoo-buds, and St. Anthony's Turnip. It is, perhaps, the commonest of the Ranunculus family in our fields, and was once supposed to give a yellow tint to butter made from the milk of cows which had eaten it. Cows, however, do not eat much of this weed, and it is more probable that the rich tint of the butter is caused by the vigorous health of the cattle when they have plenty of fresh grass and good pure air.

The root is the most acrid part of this plant; for, although the juice of the herbage is stimulating and produces sneezing, the root will blister, it is said, as certainly and with much less pain than Spanish flies. Pigs are remarkably fond of the roots, and will go long distances to get them; they are said to do them no harm.

SPECIES XVI.—RANUNCULUS HIRSUTUS. *Curt.*

PLATE XXXVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXIII. Fig. 4617.
Bab. Man. Brit. Bot. ed. v. p. 11. *Hook. & Arn.* Brit. Fl. p. 11.
R. philonotis (Ehrh.), *Benth.* Handbook Brit. Fl. p. 63.
Fries, Summ. Veg. Scand. p. 25. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 19. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 57.
R. sardous, "Crantz," *Auguste Gras,* in Bulletin de la Soc. Bot. de la Fr. Vol. IX. p. 324.

No rootstock. Stems numerous, erect or ascending, slightly branched. Leaves roundish or shortly ovoid in outline; the radical and lower stem leaves stalked, ternate, with 3-cleft segments; the middle leaflet stalked, the lateral ones sessile; or the radical leaves simply tripartite or trifid; segments coarsely serrate, or crenate-serrate; upper leaves sessile, with narrowly elliptical segments. Peduncles hairy, furrowed. Sepals hairy, reflexed. Petals with a conspicuous scale over the nectary; scale rounded at the top, considerably narrower than the claw of the petal. Head of fruit globular-ovoid. Achenes compressed, conspicuously margined, with raised points disposed in an incomplete circle (rarely in two) near the margin, visible to the naked eye; beak extremely short, ascending, straight. Receptacle hairy.

In damp meadows, especially in the vicinity of brackish water, on places overflowed in winter, and by road-sides. Rather rare, and not known to extend north of the counties of Perth and Argyle. Indeed, I have not myself seen it, except as a straggler, north of Berwickshire.

England, Scotland, Ireland. Annual or Biennial. Summer and Autumn.

Root fibrous, throwing up numerous stems 6 to 18 inches high. Leaves bearing considerable resemblance to those of R. bulbosus, but usually shorter and less divided. Flowers $\frac{3}{4}$ inch to 1 inch in diameter, bright yellow, paler than in the last species, but with the sepals reflexed in a precisely similar manner, and resembling them in every respect. Petals obovate, narrower than in R. bulbosus, and with the nectary scale much narrower in proportion, and rounded, not emarginate or truncate at the top. Achenes lenticular, reddish brown when ripe, much compressed, with a very prominent margin and a few raised obtuse points, disposed in an incomplete circle close to the margin, the points being most numerous and distinct from the apex to half-way down the outer side of the carpel; sometimes there is a second imperfect circle within the first; the whole surface on which the tubercles are placed appearing finely granulated under a lens; beak straight, ascending, triangular in profile, less than one-fourth the length of the remaining portion of the carpel. Whole plant rather dull green, more or less hairy, the base of the stems and peduncles with white spreading or reflexed hairs.

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* The Plate is E. B. 1504, with corrected dissections drawn by Mr. J. E. Sowerby.

This species has very much the general aspect of R. bulbosus, but has never the enlarged base of the stem which is found in that species. The present plant also grows in dense tufts, with numerous stems, which may be very readily separated from each other at the base. The leaves are generally rounder and less divided, the flowers smaller and paler, and the whole plant more hispid, and with the hairs on the lower part of the stem not at all adpressed. The achenes are totally different, so that when the plants are in seed the one cannot possibly be mistaken for the other.

This species is usually called R. hirsutus by British, and R. philonotis by Continental botanists. The former is the earlier name, and I have retained it, not only on that account, but because it has been applied exclusively to this plant. R. philonotis has been occasionally used to include not only R. hirsutus, but also R. trilobus, a plant of Southern Europe, which I believe to be only separable as a sub-species from R. hirsutus; the only points of difference being the much narrower petals, the fruit with raised points all over the disk, and the leaves with narrower, more serrated segments. I would then propose to accept R. philonotis as the aggregate species, including R. hirsutus and R. trilobus as sub-species. R. parvulus of Linnæus was applied to a small few-flowered form of R. hirsutus, and the name has been abandoned by general consent. M. Auguste Gras contends that the name "sardous" ought to be applied to this plant, as the earliest of its cognomens; but it is to be hoped that he will find few followers.*

Hairy Crowfoot.

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* Some botanists seem to consider it a meritorious act to rescue a forgotten name from oblivion, and to look upon such a discovery as being of almost as much benefit to science as the detection of some overlooked specific character. Such authors appear entirely to forget that names are merely arbitrary terms to represent the plants to which they belong. The rule, that when a species is already known by two or more names the earliest given of these is to be adopted, is agreed to solely as a means of attaining unanimity in nomenclature; but the revival of an obsolete appellation by which no one now knows the plant is only producing instead of avoiding confusion, and should be discouraged to the utmost.

SPECIES XVII.—RANUNCULUS PARVIFLORUS. *Linn.*

PLATE XXXVII.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXI. Fig. 4616.

No rootstock. Stems numerous, at first ascending, afterwards procumbent, little branched, dichotomous. Leaves stalked, reniform, orbicular, or pentagonal in outline, 3-cleft, with crenate-serrate segments; the radical leaves often only crenate-serrate; the upper stem leaves frequently with 5 acute lobes. Peduncles opposite the leaves or in the forks of the branches, hairy, furrowed. Sepals hairy, reflexed. Petals elliptical, scarcely exceeding the calyx, with an inconspicuous scale over the nectary. Head of fruit spheroidal, depressed. Achenes compressed, margined, covered with raised tubercles surmounted by little hooks, the former visible to the naked eye; beak nearly half as long as the rest of the carpel, with a triangular profile hooked at the point. Receptacle glabrous.

In hedge banks, cornfields, and waste places; preferring a dry gravelly or sandy soil. Rather sparingly, but generally distributed in England.

England, Ireland. Annual. Early Summer.

Root fibrous, throwing up numerous stems 6 to 18 inches long. Leaves generally cordate at the base, variable in their degree of incision, but rarely divided more than half-way down, excepting those which are near the extremity of the stem, which have narrow segments. Flowers $\frac{1}{4}$ inch in diameter, pale yellow. Achenes reddish brown when ripe, lenticular, bulging on the lower side; the tubercles more conspicuous than in R. hirsutus, and not confined to the vicinity of the margin, but spread over the whole surface of the carpel; beak smooth, greenish. Whole plant dull yellowish green, covered with soft, scattered hairs. Carpels fewer in number than in R. hirsutus, but more numerous than in the following. Petals sometimes partially abortive.

Small-flowered Crowfoot.

Old Gerarde, the herbalist, who found a use for everything, tells us "that many do use to tie a little of the herb, stamped with salt, unto any of the fingers against the pain of the toothache;" and he accounts for the cure very satisfactorily, viz.: "which medicine seldome faileth, for it causeth greater pain in the finger than was in the tooth, by means whereof the greater paine taketh awaye the lesse."

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* The Plate is E. B. 120, with corrected dissections drawn by Mr. J. E. Sowerby.

SPECIES XVIII.—**RANUNCULUS ARVENSIS.** *Linn.*

PLATE XXXVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. XXI. Fig. 4614.

No rootstock. Stem solitary, erect, slightly branched. Leaves stalked, the lowest ones obovate, toothed at the tip, the rest 3-cleft, or tripartite; or ternate, with 3-cleft or tripartite segments; the greatest amount of division in the leaves occurring in those on the middle portion of the stem, and the narrowest segments in those nearest its summit. Peduncles opposite the leaves and terminal, slightly hairy, not furrowed. Sepals slightly hairy, applied to the petals. Petals obovate-oblong, with a conspicuous scale over the nectary; scale broadest above, where it is truncate, as broad as the claw of the petal. Head of fruit spheroidal, much depressed. Achenes compressed, margined, covered with hooked spines or conical tubercles, distributed over the whole surface, but the marginal ones the longest and stoutest; beak two-thirds the length of the rest of the carpel, with a narrowly triangular profile, straight or slightly arched. Receptacle hairy.

In cornfields. Common in England; but only a straggler in Scotland, in which country the neighbourhood of Edinburgh and Glasgow appears to be the northern limit.

England, [Scotland,] Ireland. Annual. Summer.

Root fibrous, throwing up a single erect stem 6 inches to 2 feet high. Lower leaves wedge-shaped in outline, the upper ones with strap-shaped segments. Flowers scarcely ½ inch in diameter, pale yellow, more cup-shaped than usual in this genus. Achenes reddish brown, with a green beak; 4 to 8, usually all in one row, ¼ to ⅜ inch long, sub-orbicular, with the two sides nearly parallel; the spines or tubercles varying considerably in size. In this species the processes on the carpels approach much nearer the margin than in R. hirsutus and R. parviflorus, for the margin itself seems to be carried up into a prominent ring from which the largest of the spines take their rise.

A variety, *inermis*, is mentioned in the Continental Floras in which the achenes are destitute of spines or tubercles, the surface being merely reticulated; but this I have never seen, nor have I heard of its occurrence in Britain.

Corn Crowfoot.

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* The Plate of R. arvensis is E. B. 135, with additional dissections drawn by Mr. J. E. Sowerby.

The specific name *arvensis* is derived from *arvum*, a ploughed field. It is sometimes called Hunger-weed. This is one of the most virulent of the Ranunculus family, and is said to be very dangerous to cattle, although they eat greedily of it. M. Brugnon, who has given a particular account of its qualities, relates that three ounces of its juice killed a dog in four minutes. Near Turin several sheep were killed by eating it, which first led to an investigation of its effects. Cholic, with inflammation of the stomach, were the symptoms, which were best removed by pouring vinegar down the animals' throats. This poison seems to act in paralyzing the nerves of the stomach, and also in an acrid ulcerating effect, as dark spots were found in the stomach of the sheep.

It may be remarked that, in making a collection of dried plants, the bright yellow petals of the Crowfoots retain their brilliancy remarkably after drying.

SUB-GENUS III.—FICARIA. *Dill.*

Sepals 3. Petals 8 to 12. Nectary covered by a scale. Stigma sessile. Achenes smooth or hairy, spherical, with an attenuated base.

SPECIES XIX.—**RANUNCULUS FICARIA.** *Linn.*

PLATE XXXIX.

Ficaria ranunculoides, *Mönch*, et Auct. plur.

Rootstock producing oblong, slightly clavate tubers. Stem decumbent at the base, branched. Leaves stalked, broadly ovate, or reniform, cordate at the base, with the lobes approximate or diverging, repand, crenate or bluntly toothed. Peduncles much longer than the leaves from the axils of which they spring. Sepals usually 3. Petals oblong, 8 to 12. Nectary with a small scale. Head of fruit globular. Achenes globular, attenuated at the base, and with a very small dot at the apex.

SUB-SPECIES I.—**Ranunculus eu-Ficaria.**

PLATE XXXIX.*

R. Ficaria, or Ficaria ranunculoides, *F. Schultz*, Archives de Flore, 1855, p. 122; and 18th and 19th Jahresbericht der Pollichia, p. 34.

Flowers about 1 inch in diameter. Carpels nearly glabrous. Leaves appearing in spring.

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* The Plate of R. eu-Ficaria has been re-drawn from E. B. 584, with corrections and additions, by Mr. J. E. Sowerby.

Var. *α, divergens*. F. Schultz.

Ficaria ranunculoides, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. I. Fig. 4572.
Ficaria ranunculoides *α*, divergens, *F. Schultz,* Archives de Flore, 1855, p. 122.
Ranunculus Ficaria, *Jord.* Obs. sur Pl. Nouv. ou Crit. Frag. VI. p. 3.
Ficaria ranunculoides, *Gr. & Godr.* Fl. de Fr. Vol. I. p. 39. *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 20.

Lobes of the lowest leaves not overlapping at the base. Lowest sheaths narrow.

Var. *β, incumbens*. F. Schultz.

Ficaria calthæfolia, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. I. Fig. 4571 (non *Gr. & Godr.* Fl. de Fr.).
Ficaria ranunculoides *β*, incumbens, *F. Schultz,* Archives de Flore, 1855, p. 122.
R. Ficaria *β*, incumbens, *F. Schultz,* 18th and 19th Jahresbericht der Pollichia, p. 34.
R. calthæfolius, "Bluff" (non *Jord.* Obs. Frag. VI. p. 3).
F. ambigua, *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 20.

Lobes of the lowest leaves overlapping at the base. Lowest sheaths very broad, amplexicaul.

In hedgebanks, meadows, outskirts of woods, and damp places. Var. *α* common throughout Britain. I possess a specimen of var. *β* from "near Edinburgh, May, 1849," collected by myself, but the exact locality of which I do not recollect, as my attention had not then been drawn to this variety.

England, Scotland, Ireland. Perennial. Spring.

Root of white branched fibres, along with which are succulent, pale yellowish tubers, from ½ to 1 inch long, and similar ones are occasionally found in the axils of the lower leaves. Stem decumbent, sometimes rooting at the lower joints, usually branched, the termination of the branches ascending. Petioles of the lower leaves very long, the leaves themselves very variable both in outline and in the degree of indentation in the margin. I have one specimen in which the divisions between the triangular teeth or lobes extend more than one-third of the way down. Flowers variable in size, usually about 1 inch across. Petals usually about twice as long as the ovate-concave sepals, thick, rich yellow, glossy, turning whitish when they fade. Head of fruit globular. Achenes slightly downy, often abortive, spherical, with the base attenuated towards the part by which they are attached to the receptacle; the spherical and attenuated portions are nearly equal in length; the apiculus, formed by the remains of the sessile stigma, extremely small. Plant somewhat succulent, bright green, shining, the leaves often with dark markings.

Ranunculus Ficaria (Linn.) contains two sub-species, of which only one occurs in Britian. To this I give the appellation of R. eu-Ficaria.

A second sub-species is common in the south of Europe; it has much larger flowers, 1¾ to 2 inches across, and these are produced at an earlier season than in the generally distributed plant; the carpels are much more hispid, and the rounder, longer stalked leaves appear in early winter. It has been called by the following names: Ranunculus ficariæformis (F. Schultz); R. Ficaria β, calthæfolius (Gussone); R. calthæfolius (Jordan); Ficaria grandiflora (Robert); F. calthæfolia (Gr. & Godr., *non* Reich.).

A small-flowered plant, with round, deeply crenated leaves, from Mount Tagetus, in Greece, named R. ficarioides (Bor. & Chaub.), is perhaps only another sub-species of R. Ficaria.

Lesser Celandine, Celandine Crowfoot, Figwort, or Pilewort.

French, *Ficaire Renonculoide.* German, *Scharbocks-Kraut, Wild Löffel-Kraut, Pfennigsalat.*

The specific name has reference to the shape of the roots, which are somewhat like little figs. Its acrid property has led to its use as a stimulant plaster for some forms of external tumours; hence one of its popular names. As the Celandine, its praises have been sung by modern poets. Wordsworth has referred to it as "the little humble Celandine." The tiny tubers of the roots are often exposed to view by the washing of contiguous streams, or by rain, and then they look somewhat like grains of wheat: this appearance has given rise to the assertion that it has "rained wheat." The young leaves of this plant are boiled by the common people in some parts of Sweden, and eaten with safety. It appears that the deleterious properties of the whole group may be dissipated by the application of heat. It is injurious to moist grass land; but is said to be effectually destroyed by a dressing of coal or wood ashes. The flower loves the sunshine and light. We generally find it closed from about five in the evening until nine in the morning, and also during wet or very gloomy weather. Its Celtic name, *Grian* (the sun), refers to this point in its history.

TRIBE IV.—HELLEBOREÆ.

Sepals imbricated. Petals small, frequently abnormal or absent. Pistils not surrounded by a disk. Carpel with several ovules. Fruit of several follicles (rarely only one), dehiscent at maturity, or in one genus a berry.

Herbs with the leaves all radical or alternate.

SUB-TRIBE I.—CALTHEÆ.

Leaves palmately nerved, undivided, or palmately cut or divided. Flowers regular, solitary, or arranged in irregular cymes.

GENUS VII.—**CALTHA.** *Linn.*

Sepals 5 or more, sub-equal, petaloid, deciduous. Petals none. Carpels several, sessile, having the ovules disposed in 2 rows along the whole of the ventral suture; follicles distinct. Seeds numerous, oblong, with a hard smooth testa, and with the chalaza and raphe conspicuous.

SPECIES I.—**CALTHA PALUSTRIS.** *Linn.*

PLATES XL. XLI.

Hook. & Arn. Brit. Fl. ed. viii. p. 11. *Benth.* Handbook Brit. Fl. p. 63.

Root-leaves stalked, roundish or deltoid, more or less cordate at the base; upper leaves reniform-deltoid, sessile, all crenate or denticulate. Sepals 5 or 6, oval or oblong-obtuse. Carpels in a single row.

SUB-SPECIES I.—**Caltha eu-palustris.**

PLATE XL.*

C. palustris, *Reich.* Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. CI. Fig. 4712.
C. palustris, Auct. plur.

Radical leaves rounded, cordate at the base, with the lobes approximate, crenate, crenate-dentate, or rarely with triangular teeth towards the base. Stem not rooting at the joints.

Var. *α, vulgaris.*

C. vulgaris, *Schott,* Analecta Botanica Vindob. 1854.
C. palustris, *Boreau,* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 21.

Stem ascending. Flowers numerous, 1½ to 2 inches in diameter, with roundish-ovate, contiguous sepals when fully expanded. Carpels spreading, with a very short beak.

Var. *β, Guerangerii.*

C. Guerangerii, *Boreau* in Billot's Annot. 1855, p. 11; and Fl. du Cent. de la Fr. ed. iii Vol. II. p. 21.
C. riparia, *Don ?* Gard. Dict. Vol. I. p. 44.

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* The Plate is E. B. 506, with the head of fruit added by Mr. J. E. Sowerby. It represents var. *α.*

Stem ascending. Flowers numerous, 1¼ to 1½ inch in diameter, with oblong-oval sepals, not contiguous when fully expanded. Carpels spreading, with the beak nearly twice as long as in var. α, vulgaris.

Var. γ, *minor*.

Stem decumbent or procumbent, usually bearing only 1 flower. Flowers about ¾ to 1 inch in diameter. Sepals oval or oblong-oval, not contiguous when fully expanded. Carpels erect, with an extremely short beak.

In marshes and wet meadows, and by the side of streams. Common throughout Britain. Var. γ on mountains.

England, Scotland, Ireland. Perennial. Spring; var. γ, Summer and Autumn.

Rhizome short, horizontal, emitting numerous fleshy fibres. Stem ascending, or nearly erect, except in var. γ, 9 to 18 inches high, slightly branched at the top. Lower leaves stalked, roundish, very deeply cordate at the base, with the lobes approximate or frequently incumbent, the margin varying from repand to crenate in the apical portion, and from crenate to sharply toothed in the basal region; stem leaves on shorter stalks, or the upper ones sessile, reniform or deltoid-reniform in outline, with the lobes less approximate than those of the radical leaves; stipules very large, brown, membranous, with large free auricles. Flowers sub-corymbose, rich yellow, paler exteriorly. Sepals slightly unequal in size, 5 to 8 in number. Follicles various in number, spreading in varieties α and β, in which they are about ¾ inch long, erect in var. γ, and about ⅜ to ½ inch in length. The difference in the direction of the follicles in these varieties is probably owing to their number, which is always less in var. γ than in the others. Whole plant glabrous. Var. α and β grow in large tufts, but γ has the stem usually solitary. Leaves dark green, slightly shining, paler below.

The leaves are liable to considerable variation in the depth of the crenatures or teeth, and these variations seem to be independent of the forms of sepals and carpels. Var. Guerangerii may be not uncommon, but I have seen it only from near Edinburgh and Breadalbane. It is probably the C. riparia of Don, which he states to occur by the banks of the Thames, near London. Both Boreau and Don consider the plant described by them as the origin of the double-flowered Caltha often cultivated in gardens.

SUB-SPECIES II.—**Caltha radicans.**

PLATE XLI.*

Forster, in Trans. of Linn. Soc. Vol. VIII. p. 323. *Bab.* Man. Brit. Bot. ed. v. p. 11.
C. palustris, var. β, *Hook. & Arn.* Brit. Fl. ed. viii. p. 11.
C. flabellifolia, *Boreau ?* Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 21 (non *Pursh*).
C. alpestris, *Schott ?* An. Bot. Vind.

Radical leaves deltoid or reniform-deltoid, the lobes diverging so that the base is not at all cordate; margin with triangular teeth. Stem rooting at the joints.

Extremely rare. In a ditch that runs from the farmhouse called Haltown, on the estate of C. Gray, Esq., of Carse, Forfarshire, 1790, found by Mr. George Don. Mr. Hewett Watson has a specimen collected by himself in Braemar, which he is inclined to refer to this sub-species.

Scotland. Perennial. Summer.

This plant comes very near to some of the small forms of C. eu-palustris; and Mr. H. C. Watson informs me that the young state of this plant (which he has had in cultivation for many years) closely resembles C. eu-palustris; but the remarkable difference observable in the shape of the radical leaves, when fully developed, which has remained constant in cultivation for about fifty years, leads to the conclusion that it is more than a variety of that plant. Original specimens of Don in the Herbarium of the British Museum are destitute of radical leaves, but possess distinctly deltoid-dentate stem leaves such as I have never seen on C. eu-palustris. The flowers are about 1¼ inch across, with oval-oblong sepals, yellow.

C. flabellifolia (Pursh) has the flowers the size of those of Ranunculus arvensis, and appears to be distinct from the present; but Professor Boreau's description of the French plant to which that name has been given agrees well with C. radicans. C. alpestris (Schott) may also be this, judging from his description of the radical leaves.

Marsh Marigold, Water Caltrops, or Meadow Bout.

French, *Le Populage des Marais.* German, *Sumpf-Dotterblume.*

The generic name is derived from the Greek καλαθος (*kalathos*), a cup or goblet, to which the expanded flower may be likened. The praises of the Marsh Marigold have been sung by many poets, and its bright golden colour renders it a favourite everywhere. Old John Dryden says,—

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* The Plate of C. radicans is E. B. 2175, with a radical leaf added by Mr. J. E. Sowerby.

> "And get soft hyacinths with iron blue
> To shade Marsh Marigolds of shining hue."

The Scotch name Gowan or Gowlan, though indiscriminately applied to many spring flowers, is generally understood to designate particularly the daisy, dandelion, crowfoot, and Marsh Marigold. Gowan by itself is always the daisy; yellow-gowan the dandelion, &c. Burns writes,—

> "We twa have rin about the braes,
> And pu'd the gowans fine."

Few plants are more ornamental than the Marsh Marigold on the margin of the pleasure ground lake; and when its golden chalice is seen reflected in the clear water, we think of Shakespeare's lines:—

> "Hark! hark! the lark at heaven's gate sings,
> And Phœbus 'gins to rise,
> His steed to water at these springs
> On chaliced flowers that lies."

The occasional bright yellow colour of butter in the spring time has been vulgarly attributed to this plant as well as to the Ranunculus bulbosus, and with equal improbability, for cows will not eat of it unless compelled to do so by extreme hunger; and Boerhaave says that when they do so, they frequently die.

Dr. Withering gives a curious account of the medicinal properties of the plant He says: "It would appear that medicinal properties may be evolved in the gaseous exhalations of plants and flowers; for on a large quantity of the flowers of Meadow Routs being put into the bedroom of a girl who had been subject to fits, the fits ceased." An infusion of the flowers was afterwards successfully used in various kinds of fits, both of children and adults. The juice of the petals boiled with a little alum, stains paper yellow; but the colour so produced is said not to be permanent.

GENUS VIII.—TROLLIUS. *Linn.*

Sepals 5 or more, sub-equal, petaloid, deciduous. Petals 5 to 15, very small, linear, flat, with a nectariferous pore at the base. Carpels numerous, sessile, having the ovules arranged in 2 rows. Follicles distinct. Seeds oblong-angular, with a hard testa. Chalaza inconspicuous.

SPECIES 1.—TROLLIUS EUROPÆUS. *Linn.*

PLATE XLII.*

Reich, Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. CII. Fig. 4713.

Sepals 10 to 15, concave, connivent, so that the flower is subglobular. Petals 10 to 15, about as long as the stamens.

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* The Plate is E. B. 28, with head of fruit added by Mr. J. E. Sowerby.

In wet meadows and by the sides of streams, especially in upland districts. Rather rare. It occurs in most of the Scottish and Welsh counties; but in England, Derbyshire and Worcestershire appear to be the southern limit.

England, Scotland, Ireland. Perennial. Summer.

Rootstock short. Stem erect, 6 inches to 2 feet high, nearly simple, clothed at the base with wiry fibres, which are really the remains of decayed leaf-stalks. Radical leaves on very long stalks, pentagonal in outline, divided to the base into 3 primary segments, of which the two lateral ones are again so deeply 2-cleft that the leaf might almost be termed quinquipartite; segments deeply cut, and the portions into which they are divided bluntly serrate; stem leaves on shorter stalks, and the uppermost ones quite sessile, the segments narrower and not contiguous. Flowers sub-solitary, terminal, spheroidal, 1 to 1½ inch in diameter, pale but clear yellow in colour. Sepals roundish-obovate, very concave. Petals inconspicuous, linear-strap-shaped, slightly widened upwards, with a long claw at the base, at the junction of which with the flat lamina the nectariferous pore is situated. Stamens very numerous. Head of fruit consisting of several rows of very dark brown follicles. Follicles indefinite, sub-cylindrical, curved, transversely wrinkled, furnished on the back with a prominent keel, which is continued beyond the truncate apex of the carpel in the form of a subulate beak or mucro, consisting of the persistent style. Seeds numerous, finely punctate, opaque, brownish black. Whole plant glabrous, bright green, the under side of the leaves much paler, stem seldom producing more than a single flower.

Globe Flower.

French, *Trolle Globuleuse.* German, *Die Kugelranunkel, Trollblume.*

This genus was so called by Conrad Gesner, because of the sphere-like shape of the flower, —from *trol* or *trolen*, an old German word signifying something round. To *troll* or to *trundle*, to sing or send something round, was a word in general use in the sixteenth and seventeenth centuries.

In common with the chief part of the family, the Globe Flower is acrid in its qualities. The common people of Westmoreland, Scotland and Sweden consider it a sort of festival flower, going in parties to gather it for the decoration of their doors and apartments, as well as their persons. It is known in Scotland commonly as the Lucken Gowan, *i. e.* cabbage daisy; and Allan Ramsay, the Scotch poet, in his pretty little song beginning "O Katy, wilt 'u gang wi' me?" says:—

"We'll pull the daisies on the green,
The *lucken gowans* frae the bog;
Between whiles lowly we will lean
And rest upon the velvet fog."

GENUS IX.—ERANTHIS. *Salisb.*

Sepals 5 to 8, equal, petaloid, deciduous. Petals 5 to 8, much shorter than the sepals, tubular, bilabiate, the exterior lip the longest. Carpels 5 to 8 or more, in 1 whorl, stipitate, having the ovules arranged in 1 row. Follicles dehiscent, free, each having a separate stalk. Seeds roundish, with a hard slightly-chagrined testa. Flowers involucrate.

SPECIES I.—ERANTHIS HYEMALIS. *Salisb.*

PLATE XLIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. CI. Fig. 4714.
Helleborus hyemalis, *Linn.* Sp. Pl. 783.

Petals with a filiform claw about equal to the tube. Involucre of 2 leaves cut into narrowly oblong segments. Carpels on stalks not half their own length. Styles about half the length of the carpels, and not exceeding that of the stamens. Seeds 8 or more.

Naturalized in parks and thickets, but having no claim to be considered truly indigenous. I have seen specimens from Wimbledon Park, Surrey; Oakley Park, Cirencester, Gloucestershire; Lanyar Plantations, Notts; Camp Hill, Yorkshire; and Stapenhill, Derbyshire. It has also been reported from Hertfordshire and Craigmillar Castle, near Edinburgh.

[England, Scotland.] Perennial. Early Spring.

Rhizome short, resembling a tuber, brownish black. Leaves all radical, on long stalks, roundish in outline, tripartite, with the lateral segments very deeply 2-cleft, and all cut into contiguous, oblong, blunt lobes, which sometimes have a few blunt teeth near the apex. Scapes naked, 3 to 9 inches high, terminated by a single erect flower, surrounded by an involucre of 2 sessile bracts resembling the leaves, but with the slightly reflexed segments fewer, broader, and less approximate. Flowers cup-shaped, 1 inch or more across. Sepals ovate-oblong, slightly concave, pale but clear yellow. Petals rather shorter than the stamens, with a long slender claw nearly equal in length to the upper portion, which is a 2-lipped tube; the outer lip (which with the part of the tube of which it is a continuation represents the lamina of the petal) notched at the apex; the inner lip

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* The Plate is from a drawing by Mr. J. E. Sowerby, taken from Bot. Mag. No. 3, corrected from dried specimens.

(which is much shorter than the other), together with the inner side of the tube, is apparently a great development of the scale which so frequently covers the nectary in the genus Ranunculus; and the tubular form of the petal results from the adnation of the edges of this enlarged scale to those of the limb of the petal. Follicles on separate stalks, brownish, faintly wrinkled transversely, terminated by the persistent styles, which form the beak or mucro at the apex of the carpel, as in the genera Caltha and Trollius.

Common Winter Aconite.

French, *Eranthis d'Hiver.* German, *Winterling.*

The generic name of Eranthis is derived from ηρ (*er*), the spring, and ανθος (*anthos*), a flower, because the bright yellow blossoms appear in the early spring. The specific name *hyemalis* signifies in Latin winterly. Its chief attraction is the early period of the year at which it blossoms, when few other flowers are to be met with.

GENUS X.—HELLEBORUS. *Linn.*

Sepals 5, sub-equal, herbaceous, occasionally petaloid, persistent. Petals 5 to 12, much shorter than the sepals, tubular, slightly 2-lipped or obliquely truncate at the apex. Carpels 3 to 10, in 1 whorl, sessile or sub-sessile, having the ovules arranged in 2 rows. Follicles dehiscent at the apex, free or slightly adhering at the base, sessile, or all on one common stalk when stipitate. Seeds with a hard shining testa. Flowers not involucrate.

SPECIES I.—HELLEBORUS VIRIDIS. *Linn.*

PLATE XLIV.*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. CI. Fig. 4718.

Stem few-flowered. Radical leaves pedate-digitate. Uppermost bracts palmately divided, or cleft, or serrated. Sepals spreading, scarcely concave. Petals as long as the stamens. Follicles sessile.

In woods and copses. Rare. It has been recorded from most of the English counties, but in many of them is certainly introduced, and in others only a doubtful native. I have seen it near Sittingbourne, in Kent, in copses on the chalk, where I believe it to be really indigenous; and Professor Oliver is quoted in the Cybele

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* The Plate is re-drawn from E. B. 200 by Mr. J. E. Sowerby, and a radical leaf added by him.

Britannica as stating that the plant had "the appearance of a native, certainly of a denizen," near Arnside Knott, Westmoreland.

England. Perennial. Spring.

Rootstock a short oblique, blackish, fleshy rhizome. Stem erect, striated, 1 foot to 18 inches high, sheathed at the base, slightly branched at the apex, bare of leaves from the base to the first branch. Root leaves not fully developed until after the period of flowering, on long stalks, with 3 or 5 sessile leaflets, of which the lateral one on each side is deeply cleft, or divided into 2, 3, or 4 segments resembling the undivided central leaflets, which are narrowly elliptical, acuminate, with rather large serrations, and sometimes a few small, pointed lobes. Lower stem leaves with short semi-amplexicaul sheath-like petioles, the uppermost ones or bracts sessile, cut or partite into segments like those of the radical leaves, but fewer in number, and less acuminate; sometimes the highest bracts are undivided, being elliptical, with serrated edges. Flowers terminating the branches, seldom more than 3 or 4 on each stem, slightly drooping, 1½ to 2 inches in diameter, pale yellowish green. Sepals 5, oval-obtuse, or very shortly acuminate. Petals 9 to 12, about two-thirds as long as the stamens, curved, the claw about one-fourth the length of the whole, the outer lip very little longer than the inner one, erose at the apex. Pistils usually 3, with styles exceeding the stamens. Carpels sessile, slightly connate at their base, sub-cylindrical, obliquely truncate at the apex, and tipped by the persistent style, which forms a beak more than one-half the length of the carpel. Whole plant glabrous, deep green, the leaves shining above, paler beneath where the veins are prominent. Stems annual.

Green Hellebore.

French, *Hellébore Vert.* German, *Die Grüne Niesswurz.*

The generic name of this plant, from ελειν (*elein*), to injure, and βορα (*bora*), food, indicates its poisonous qualities, and the specific name its green colour. The Hellebores afforded the ancient practitioners of medicine quite a world of remedies to revel in. They were called generally by the name *veratrum*, and were supposed to be most valuable ingredients in medicine. Of the cathartic and powerful effect of the Black Hellebore or Christmas Rose (Helleborus niger) there can be no doubt, although one celebrated physician says he administered it six hundred times without offence. It certainly requires great caution in its use; for its degree of acridity depends much on heat, dryness and other external casualties. One judicious writer observes: "It is used by venturesome quacks in decoction and coarse powder to kill worms in the body, which it never faileth to do; where it killeth not the patient, it would certainly kill the worms; but the worst of it is, it will sometimes do both." The great hazard of such remedies being ignorantly employed, is seen from the account of its effects when administered in doses not absolutely fatal: "With some it violently vomits and rendereth heartsick even to swooning; and if through strength of nature they recover, some have lost their hair, and the nails from their fingers and toes, and the scarf skin of the whole body has peeled off from head to foot thereby." The Green Hellebore grows in shady places, in groves, under trees, and children have been tempted to put it in their mouths. At first the taste is warm and pungent, it then produces a cold numbness, and the symptoms of many other vegetable poisons, so well described by Shakespeare in "Romeo and Juliet," where the Friar tells Juliet what to expect when she swallows the contents of his phial:—

> "through all thy veins shall run
> A cold and drowsy humour, which shall seize
> Each vital spirit; for no pulse shall keep
> His natural progress, but surcease to beat:
> No warmth, no breath shall testify thou livest;
> The roses in thy lips and cheek shall fade
> To paly ashes; thy eyes' windows fall,
> Like death, when he shuts up the day of life."

Both this species and the following have been often used medicinally, instead of the true ancient or Greek H. officinalis of Sibthorp and the H. niger.

SPECIES II.—HELLEBORUS FŒTIDUS. *Linn.*

PLATE XLV.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Ran.* Tab. CIII. Fig. 4715.

Stem many-flowered. Lower leaves pedate. Uppermost bracts entire. Sepals erect, concave. Petals shorter than the stamens. Follicles on a short common stalk.

In woods and thickets. Rare, but recorded from most of the English counties, in many of which, however, it is certainly not indigenous. Dr. Bromfield considers it truly wild in the chalky beech woods of Hampshire.

England. Perennial. Early Spring.

Rootstock oblique, black, woody. Stem smooth, 1 to 2 feet high, leafy, the lower part marked by the scars where leaves have fallen off, much branched in the upper portion. No radical leaves; those on the unbranched part of the stem evergreen, truly pedate, on stalks expanded at the base. Segments very narrowly elliptical, acute, serrated. Leaves at the base of the branches oblong, sheath-like, with a few linear lobes at the apex. Flowers in small cymes, which are combined so as to form a somewhat flat-topped or sub-corymbose panicle. Bracts pale yellowish green, ovate-lanceolate, quite entire, or the lower ones slightly lobed at the apex. Flowers numerous, drooping, about 1 inch in diameter. Sepals 5, shortly-obovate, truncate or slightly emarginate, pale yellowish green, with a dull purple border, connivent in flower, spreading in fruit. Petals about half as long as the stamens, claw very short, the inner lip a little shorter than the outer, erosely toothed. Pistils usually 3, their styles not exceeding the stamens. Carpels on a short stalk, slightly connate at their base, leathery, wrinkled transversely, glandular, the persistent style forming a beak scarcely one-third the length of the carpel itself. Whole of the lower part of the plant glabrous, upper portion glandular-pubescent; unbranched part of the stem perennial, leaves evergreen, thick and leathery in texture, smooth and shining above, paler below, with the mid-vein prominent.

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* This plate has been re-drawn from E. B. 613, with some corrections and the addition of a radical leaf, by Mr. J. E. Sowerby.

This plant can scarcely be confounded with the last, as the inflorescence is different, the individual flowers smaller and deeply cup-shaped, instead of open and nearly flat; while the perrenial stem furnished with pedate leaves will at all seasons distinguish this from H. viridis. The odour is also much more disagreeably fœtid.

Stinking Hellebore, Bear's-foot.

French, *Hellébore Fétide,* or *Pied de Griffon.* German, *Die Stinkende Niesswurz.*

Called Bear's-foot from the shape of its leaves, and *fœtidus* from its smell. It is a powerful poison, and possesses the active properties of the genus even more strongly than those which are recognized as medicines. At one time both this species and H. viridis were admitted into the British Pharmacopœia, but great caution is necessary in their administration.

SUB-TRIBE II.—ISOPYREÆ.

Leaves ternately or somewhat pinnately decompound. Flowers regular, solitary, or arranged in irregular cymes.

GENUS XI.—AQUILEGIA. *Linn.*

Sepals 5, equal, petaloid, deciduous. Petals 5, equal, with a very short claw, above which the petal is produced into a hollow funnel-shaped tube, passing backwards between the sepals, and terminating in a spur more or less curved round towards the peduncle. Interior stamens sterile, with membranous expanded filaments applied to the ovary. Carpels 5, in one whorl, becoming at maturity dehiscent follicles, slightly connate at the base.

SPECIES I.—AQUILEGIA VULGARIS. *Linn.*

PLATE XLVI.*

Reich. Ic. Fl. Germ. et. Helv. Vol. IV. *Ran.* Tab. CXIV. Fig. 4729.

Petals with the spurs hooked at the apex. Stamens a little longer than the petals. Leaves biternate, with the leaflets 3-lobed, crenate.

In woods, copses, and on banks, especially on a calcareous soil. Reported from many of the English and a few of the Scotch counties, but probably introduced in many of these localities. I have seen it in chalky copses in Kent and Surrey in places where there could be no doubt of its being truly indigenous. Dr. Bromfield considered it also truly native in the Isle of Wight; Mr. H. C. Watson in Cumberland, and Mr. Gutch in Annandale, Dumfriesshire. I have likewise found it in several places in Scotland, as far north as Clackmannanshire, but only where it has originally been planted, or escaped from cultivation.

England, Scotland, Ireland. Perennial. Summer.

Rootstock thick and fleshy, brownish black, generally branched. Stem erect, 18 inches to 3 feet high, one only produced from each branch or head of the rootstock, clothed at the base with the fibrous remains of decayed leaf-stalks, slightly branched in the upper portion. Radical leaves numerous, stalked, with the base of the stalks dilated, biternate, the secondary leaflets about as broad as long, irregularly 3-lobed, the lobes with a few large crenatures; stem leaves few, on much shorter stalks; the uppermost ones or bracts quite sessile, with 3 narrow lobes. Flowers terminating the stem and branches, arranged in an irregular corymbose cyme; flower drooping or pendulous, 1½ to 2 inches in diameter, generally blue in the truly native plant, but occasionally white, reddish, or purple, in which cases it may be suspected to be of garden origin. Sepals lanceolate-ovate, acute, similar in texture and colour to the petals. Limb of the petal oblong-truncate, nearly as long as the tubular spur, the extremity of which is sharply curved. Inner sterile filaments much broader than the external fertile ones, white, with the edges elegantly crimped. Anthers yellow. Styles longer than the anthers. Carpels with short hairs, cylindrical, tipped by the persistent style. Stem, leaf-stalks, and peduncles generally hairy. Leaves glabrous, light green, slightly glaucous, on the upper side much more so, with the veins transparent.

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* The Plate, E. B. 297, required so much correction, that Mr. J. E. Sowerby has made a new drawing for the present edition. This drawing is chiefly from the old Plate, but with the various inaccuracies avoided, and the fruit added from dried Kentish specimens.

Common Columbine.

French, *Ancolie, Gants de Notre Dame.* German, *Die Akelei, Narrenkappe.*

The generic name comes from *aquila*, an eagle, to the claws of which the nectaries bear some resemblance. The English name from *columba*, a dove, from a fancied likeness to this bird. The beauty of the blossoms of this fanciful and pretty plant has long introduced it into our flower-borders. Cultivation produces various colours, and the flowers become double in several ways. The form of the nectary seems to bid defiance to the bee in search of honey; but the sagacity of this wonderful insect is not to be defeated, for, according to Dr. Withering, on finding that he cannot enter, he penetrates both calyx and corolla, near the dépôt of the sweet treasure, and thus extracts it without further difficulty. In Brown's "British Pastorals" we have it recorded that in former times a Columbine was the insignia of deserted lovers, but how this originated does not appear :—

> "The Columbine, by lonely wand'rer taken,
> Is then ascribed to such as are forsaken."

The whole plant used to be recommended medicinally, but it belongs to a suspicious Natural Order, and Linnæus asserts that children have lost their lives by taking an over dose of it.

SUB-TRIBE III.—DELPHINEÆ.

Leaves palmately nerved, or palmately cut or divided. Flowers irregular, generally racemose.

GENUS XII.—DELPHINIUM. *Linn.*

Sepals 5, petaloid, deciduous, the upper one produced backwards into a conical spur, the others without spurs. Corolla of 4 petals, either all united together and prolonged backwards into a spur which is contained within the hollow spur of the upper sepal, or of 4 free petals, when the two upper have spurs contained in that of the upper sepal, while the two lateral ones are without spurs. Carpels 1 or 3 to 6, sessile, becoming at maturity dehiscent follicles, not connate at the base.

Annual or perennial, erect, branched herbs, with alternate palmately-lobed or -cut leaves. Flowers in terminal racemes, which are simple or combined in panicles.

SUB-GENUS I.—PHLEDINIUM. *Spach.*

Petals united. Carpels solitary.

SPECIES I.—DELPHINIUM AJACIS. *Reich.*

PLATE XLVII. (A.)*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. LXVII. Fig. 4670.

Baker, in Proceedings of the Thirsk Nat. Hist. Soc., Phytologist, New Series, 1858, p. 376.

Gay, in *Gr. & Godr.* Fl. de Fr. Vol. I. p. 46. *Boreau*, Fl. du Cent. de la Fr. ed. iii. Vol. II. p. 25.

D. Consolida, *Bab.* Man. Brit. Bot. ed. v. p. 12. *Hook. & Arn.* Brit. Fl. ed. viii. p. 13. *Benth.* Handbook Brit. Fl. p. 66. *Sm.* Eng. Bot. ed. i. No. 1839; Eng. Fl. Vol. III. p. 30. (Non *Linn.*)

D. Consolida β, pubescens, *Lowe*, Fl. of Madeira, p. 7.

Racemes generally elongated, arranged in a loose panicle. Carpels pubescent. Follicle downy, oblong, cylindrical, obliquely truncate at the apex, the persistent style about one-sixth the length of the carpel. Seeds with continuous waved ridges. Lower bracts cut into linear divisions.

Cornfields. Rare. It has been long established as a weed in Cambridgeshire, "but is now disappearing through improved farming" (Bab.). It occurs as a straggler in various other counties, even as far north as Edinburgh, but does not appear to be permanently naturalized except in Cambridgeshire.

England, [Scotland]. Annual. Summer.

Stem solitary, slightly branched, branches ascending. Leaves multifid, the lower ones stalked, the upper sessile. Segments short, linear. Racemes 4- to 16-flowered, terminating the stem and branches. Lowest bracts resembling the leaves, but smaller, and with fewer segments; uppermost bracts entire. Pedicels ascending-patent, about as long as the lowest and much longer than the upper bracts, elongating a little after flowering, with two small entire bractioles near the middle of each. Flowers about 1 inch in diameter, the spur $\frac{3}{4}$ inch long, curved upwards. Sepals rhomboid-spatulate, with slender claws, bright French blue, more rarely white or pink, paler on the outside. Petals combined into a monopetalous corolla, open on the lower side, pale purplish blue, with a few dark lines; the two upper lobes darker blue, longer and much narrower than the lateral ones. Follicle about $\frac{3}{4}$ inch long, cylindrical, oblong, a little wider about one-third from the base, olive, downy. Seeds nearly black, surrounded by numerous, closely-placed, thin, membranous, waved, transverse ridges. Whole plant dull green, finely pubescent.

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* The Plate (D. Consolida), E. B. 1839, is retained as a good figure of D. Ajacis. The capsule and seed are added from a Cambridgeshire specimen.

This plant has usually been considered by British writers as D. Consolida (Linn.). Mr. Baker was the first to draw attention to the fact that it was not that common Continental species. It is certainly the D. Ajacis of Reichenbach, Gay, and most of the Continental authors; but D. Ajacis of the Linnæan Herbarium is the D. orientale of Gay and Continental authors. Strictly speaking, D. orientale ought therefore to bear the name of Ajacis, and the present species receive a new specific appellation. As, however, the three plants are well known on the Continent by the names D. Consolida, D. Ajacis, and D. orientale, it is much better to continue to use these names than to introduce alterations and thereby cause confusion.

Branching Larkspur.

French, *La Dauphinelle, Pied d'Alouette.* German, *Der Rittersporn.*

The name of the genus is derived from δελφιν (*delphin*), a dolphin, on account of the nectaries of the plant bearing a resemblance to imaginary figures of the dolphin. The specific name is said to have arisen from the fancy that the form of the letters A J A may be traced in the lines on the petals of the flower. This plant belongs to the same genus as the Stavesacre (D. Staphisagria) of our gardens, and contains the same active principle, which, when extracted, is known as delphinia. It is an irritant poison, and produces the same effects on the system as veratrine.

SPECIES II.—**DELPHINIUM CONSOLIDA.** *Linn.*

PLATE XLVII. (B.)*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. LXVI. Fig. 4669.

Racemes very short, arranged in a sub-corymbose manner. Carpels glabrous. Follicle glabrous, ovoid, rather abruptly truncate at the apex. Style one-half to one-third as long as the rest of the carpel. Seeds with interrupted waved ridges.

Cornfields in the Channel Islands. Probably only a casual straggler; but I possess a specimen gathered in Jersey by Dr. Dickson, and sent by him to the Botanical Society of Edinburgh, from which I received it. (D. Ajacis is not unfrequent in Jersey.)

[Channel Islands.] Annual. Summer.

Very similar to the last, but more branched, and the branches shorter and spreading. Leaves with narrower segments. Bracts shorter, and all entire. Carpel quite glabrous, reddish brown, about half as long as that of C. Ajacis, and much more abruptly truncate at the apex. Style longer. Seeds with the transverse ridges broken up into rows of scales.

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* A small portion of the Jersey specimen has been drawn by Mr. J. E. Sowerby, and given in a corner of the plate of D. Ajacis.

Wild Larkspur.

French, *Dauphinelle des Champs.* German, *Feld-Rittersporn.*

The specific name comes from the Latin word *consolido*, to make sound. The expressed juice of the petals mixed with a little alum makes a tolerable blue ink. The seeds partake of the acrid and poisonous qualities of the genus. Portions of the plant are said to enter into the composition of those French cosmetics which are so detrimental to the skin. It was formerly admitted into the European Pharmacopœias.

GENUS XIII.—**ACONITUM.** *Linn.*

Sepals 5, unequal, petaloid, deciduous, the uppermost one helmet-shaped, the others slightly concave, the lowest pair the narrowest. Petals 2 to 5, the two upper included within the helmet-shaped sepal, with very long stalk-like claws, the lamina of the petal much shorter than the claw, with the inner surface of which it forms an acute angle, the base produced backwards into a more or less recurved hollow spur, which appears a continuation of the claw; the three lower petals very small, resembling abortive stamens, frequently obsolete. Carpels 3 to 5, sessile, becoming at maturity dehiscent follicles, not connate at the base.

Perennial herbaceous plants, with enlarged fleshy fusiform tubers, composed of root and rootstock combined into one, increasing by giving off short, thick, lateral shoots, at the extremity of which a new tuber is produced similar to the parent one. Stem erect, with alternate, palmately-lobed or -cut leaves. Racemes terminal, simple, or combined in panicles.

SPECIES I.—**ACONITUM NAPELLUS.** *Linn.*

PLATE XLVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. LXXVI. & LXXVII.; also Tab. LXXXVIII. to XCIX. Fig. 4694 to 4710.

Raceme very long, simple, or slightly branched at the base. Helmet-sepal arched, with a peak in front. Upper petals with the stalk or claw curved, lamina nearly horizontal, recurved at the free apex; spur short, slightly recurved, forming a rounded knob at the apex of the claw; lower petals often absent. Carpels divergent when young.

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* The plate given is E. B. 2730, with the figure of the root added by Mr. J. E. Sowerby.

In shady places by the banks of streams. Rare, but apparently wild in Somerset; Denbigh; near Leominster, Herefordshire; near Newton, Devon; and in Monmouthshire. It also occurs in other localities, where its adventitious origin is almost certain.

England, [Scotland]. Perennial. Late Summer, Autumn.

Root black, sending up a single stem, which is from 2 to 3 feet high. Leaves alternate, on short stalks slightly dilated at the base, pentagonal in outline, palmately 3- or 5-partite, with the segments deeply cut, or having narrow projecting lobes. Raceme terminal, simple, or with a few branches at the base. Bracts small. Bracteoles near the flower, entire. Pedicels erect, downy, bearing dark purplish-blue, horizontal flowers, 1 to $1\frac{1}{4}$ inch in their greatest diameter. Helmet compressed, semicircular, crescent-shaped in profile. Lateral sepals roundish-obovate, lowest ones lanceolate. Filaments dilated at the base. Anthers blackish green. Pistils 3, usually at first diverging. Follicles fuscous, connivent, about $\frac{3}{4}$ inch long, sub-cylindrical, truncate at the apex, tipped by the persistent style, which forms a beak about one-third the length of the rest of the carpel. Seeds nearly black, with an uneven spongy testa. Plant slightly hairy. Leaves dark green, shining above, much paler beneath. Sepals and carpels slightly hairy. The two upper petals may be compared to those of Aquilegia, if we suppose the latter to have claws much elongated and arched.

A very variable species, containing several sub-species, which, however, pass insensibly into each other, and of which no satisfactory characters have yet been given.

Common Wolfsbane, Aconite, or Monkshood.

French, *Aconit.* German, *Eisenhut, Sturmhut.*

The generic name of this plant is variously supposed to be derived from *ακοντιον* (*akontion*), a dart, because used by barbarous nations to poison their arrows; or from *ακονη* (*akone*), cliffy, rocky, because the species grow in rocky places. The specific name Napellus signifies a little turnip, in allusion to the shape of its roots. This species of Aconite is very generally cultivated in gardens. Doubts are entertained as to the identity of the species first used in medicine by Störck, a German physician, in 1762. The London Pharmacopœia recognizes our present species Napellus as the one from which all tinctures and extracts are to be prepared. All the species of the genus contain an active principle known by the name of aconitine, one of the most formidable poisons which have yet been discovered. It is combined in the plant with an organic acid called aconitic acid, and exists in all parts of the plant, but especially in the roots. The smallest portion of either root or leaves when first put into the mouth occasions burning and tingling, and a sensation of numbness immediately follows its continuance. So deadly are its effects, that $\frac{1}{50}$th of a grain of aconitine will kill a sparrow in a few minutes; and the tenth part of a grain introduced into the cellular tissue of a rabbit killed the animal in five minutes. It is even more powerful than pure prussic acid, and acts with tremendous rapidity. Dr. Roupell states that $\frac{1}{100}$th of a grain will act locally, so as to produce a well-marked sensation in a part for a whole day. Fearful results have very frequently followed the accidental administration of this deadly substance, for which no certain antidote has yet been discovered. As a medicine it is supposed to be valuable, if cautiously given, to diminish the activity of the nervous system, and to subdue the action of the heart; as also in external applications, to allay the pain of neuralgia. The root has occasionally been mistaken for horseradish, and has been eaten accordingly with fatal results; it is, however, shorter, darker, and more fibrous than horseradish. Dr. Taylor, in his work on Poisons, mentions cases where the leaves have produced similar terrible effects. The best method of proceeding, in cases of poisoning by Aconite, is to empty the stomach immediately by an emetic of mustard, or the stomach-pump, and then to administer animal charcoal as speedily as possible. Warm water should be plentifully given, and afterwards spirits of sal volatile, brandy, and coffee. Some species of Aconite were known to the ancients, and the Aconitum lycoctonum of Linnæus appears to be the 'Ακόνιτον λυκόκτονον (*Aconiton lucoctonon*) of Dioscorides. It was a species of Aconite that entered as an ingredient into the poison which the old men of Ceos were condemned to drink when they became infirm, and is also supposed to be the poison alluded to in the fable of the cup which Medea prepared for Theseus. There is considerable uncertainty as to the action and strength of preparations of Aconite in the form of *tinctures*. In a case related in Cormack's *Edinburgh Journal*, April, 1844, a man recovered in three days, having taken upwards of ten drachms of the tincture; while a late physician at Birmingham is reported to have died from the effects of not more than eighty drops taken in a period of four days. Dr. Pereira informs us that he has known general numbness produced in hysterical females by a dose of only *five minims* of a carefully prepared tincture. Recently there have been in private circles distressing cases of almost sudden death succeeding the accidental swallowing of a few drachms of tincture of Aconite for another and harmless medicine, owing to careless placing of the bottles, and the absence of any distinctive mark on the bottle containing this deadly poison. No precaution can be too great to take when we have such powerful and terrible agents to deal with. It has been observed that various species of Aconite possess the same narcotic properties as A. Napellus; but none of them equal in energy the A. ferox of the East Indies, the root of which is prevalently used there as an energetic poison, under the name of Bikh or Nabee. Any method of testing for the presence of Aconite in a suspected substance is very difficult; but Dr. Christison observes that its remarkable taste, which is at first bitter, but afterwards gives rise to numbness and tingling of the lips, will enable the analyst to distinguish it from other vegetable poisons. Another mode of testing is suggested by Dr. Pereira: the poisonous extract when applied to the eye produces contraction of the pupil.

SUB-TRIBE IV.—CIMICIFUGEÆ.

Leaves ternately or pinnately decompound. Flowers regular, racemose.

GENUS XIV.—ACTÆA. *Linn.*

Sepals 3 to 5, sub-equal, petaloid, deciduous. Petals 4 to 10, small, flat, spatulate, with slender claws. Carpel 1, with numerous ovules. Fruit a berry, containing smooth, flattish seeds.

Perennial herbs, with a rhizome sending up erect stems. Leaves alternate, ternately bi- or tri-pinnate. Flowers small, in short racemes.

SPECIES I.—ACTÆA SPICATA. *Linn.*

PLATE XLIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. CXXI. Fig. 4739.

Raceme oblong. Pedicels about as long as the flower, slightly thickened in fruit. Berry purplish-black when ripe.

In woods in the North of England, but very local, occurring near Scarborough and at Ingleborough, in Yorkshire; and is also stated to grow in the Lake district, near Ambleside and Ulswater. Naturalized at Cleish Castle, in Kinross-shire.

England, [Scotland]. Perennial. Summer.

Rootstock a short blackish rhizome. Stem erect, 1 to 2 feet high, simple, seldom branched, bearing 1 to 4 stalked leaves, which are twice or thrice ternately pinnate, with ovoid or sub-rhomboidal leaflets, 1 to 3 inches long, regularly lobed and deeply serrate. Stipules adnate, with short, free, rounded auricles. Peduncle pubescent, terminal; but occasionally there are shorter ones from the axils of the upper leaves. Raceme 1 to 2 inches long, compact while in flower, lengthening and becoming more lax as the fruit ripens. Pedicels pubescent, ascending in flower, patent or divaricate in fruit. Sepals 4, whitish, oval, blunt, concave. Petals much smaller than the sepals, spatulate or oblanceolate, the slender claw nearly as long as the limb; sometimes absent. Filaments dilated in the upper part. Berry shortly ovoid, ½ inch long, at length black. Flowers scarcely ¼ inch across. Plant dark green, glabrous, slightly pubescent.

Baneberry, Herb Christopher.

French, *Actée en Épi.* German, *Schwarzwurz.*

The generic name comes from ακτη (*akte*), the Greek name of the Elder, which these plants much resemble in foliage and fruit. The odour of this plant is powerfully disagreeable; toads are, however, said to enjoy it, and to seek for it. The berries are black and poisonous; their juice, with alum, yields a black dye. It is supposed by some tha the root has properties which render it valuable in medicine, but it should be administered with the greatest caution if at all.

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* The Plate is E. B. 918, with the fruit added by Mr. J. E. Sowerby.

TRIBE V.—PÆONIEÆ.

Sepals imbricated, persistent, sometimes foliaceous. Petals large. Carpels surrounded by a disk. Follicles 2 to 5, many seeded. Herbs or shrubs with radical and alternate leaves twice or thrice ternately pinnate.

GENUS XV.—**PÆONIA.** *Linn.*

Sepals 5, unequal, herbaceous, persistent. Petals 5 to 10, very large, without a distinct claw or nectariferous pore. Carpels 2 to 5, surrounded by a more or less developed fleshy disk. Follicles often woolly, containing numerous large brightly-coloured seeds.

Large perennial herbs or shrubs, with solitary, showy flowers.

SPECIES I.—**PÆONIA CORALLINA.** *Retz.*

PLATE L.*

Reich. Ic. Fl. Germ. et Helv. Vol. IV. *Ran.* Tab. CXXVIII. Fig. 4745.

Stem simple, herbaceous. Leaflets oval or elliptical, entire. Petals broadly obovate. Stigmas recurved. Follicles diverging when ripe.

Naturalized on the rocky cliffs of Steep Holmes Island, at the mouth of the river Severn, and said to have once been abundant there; but it is now become very scarce. It is also reported from a few other places,—as near the "Rocks," Bath, and at Kildale Woods, Cleveland, Yorkshire, "probably on the site of an old garden."—(Sup. to Fl. of Yorkshire.)

[England.] Perennial. Summer.

Rootstock producing thickened, fleshy, sessile or stalked carrot-shaped tubers. Stem 1 to 2 feet high, 1-flowered. Leaves stalked, ternate, the divisions again ternate or pinnate, with 2 pairs of leaflets and an odd one; uppermost leaves resembling one of the leaflets of the lower ones; leaflets 2 to 4 inches long. Flower about 4 inches in diameter. Calyx with 1 or 2 of the sepals resembling one of the leaflets. Petals crimson. Filaments crimson, with yellow anthers. Pistils covered with whitish wool. Stigmas crimson, hooked, or even coiled. Follicles about 1¼ inch long, very woolly, spreading horizontally. Plant nearly glabrous. Leaves dark green above, glaucous beneath.

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* The Plate is E. B. 1513, unaltered.

Entire-leaved Male or Coral Peony.

French, *Pivoine Coralline.* German, *Eichtrose.*

This genus of plants is said to have been named after the physician Paeon, immortalized for having cured Pluto and other gods of wounds received during the Trojan War, it is said, with the aid of this plant. The Peony is a common garden plant, and is very showy and handsome with its rich-coloured flowers when well placed. In its wild native haunts it is peculiarly attractive. Dr. Withering says: "Few aquatic excursions can prove more interesting to the naturalist than a sail through the romantic pass of St. Vincent's Rocks to the Holmes Islands. The Steep Holmes represents the rugged truncated apex of a submarine mountain, whose abruptly precipitous sides are only accessible at one proper landing-place. Amid the shelving rocks and loose shingly stones, at an elevation of 100 feet,

'There ye may see the Peony spread wide.'"

It seems almost peculiar to this locality, and the supposition would be that it has been introduced from some wrecked vessel, or that it must have escaped from some neighbouring garden; but tradition recognizes its existence for so many years in this spot, that it would be difficult to trace its origin. The superstitions connected with the Peony are very numerous. In ancient times it was supposed to be of divine origin, an emanation from the moon, and to shine during the night, protecting shepherds and the harvest from injury, driving away evil spirits, and averting tempests. Josephus speaks of the Peony as a wonderful and curious plant. He says, according to Gerarde, that to pluck it up by the roots will "cause danger to he that touches it; therefore a string must be fastened to it in the night, and a hungry dog tied thereto, who, being allured by the smell of roasted flesh set towards him, may pluck it up by the roots." Pliny and Theophrastus assert that "of necessity it must be gathered in the night; for if any man shall pluck of the fruit in the daytime, being seen of the woodpecker, he is in danger to lose his eyes." Gerarde, with discernment superior to his time, adds: "But all these things be most vaine and frivolous, for the root of Peionie may be removed at any time of the yeare, day, or houre whatsoever." Still, although he disallows the superstitions connected with the gathering of the plant, he believes in its medical virtues, and gives a long list of ailments and diseases for which it is a sovereign remedy. The seeds have been strung and worn round the neck as an ornament, from their beautiful red colour, and frequently not without reference to cabalistic purposes as a protection against evil spirits. At the present day necklaces are made of small beads carved from the root of the Peony, and sold in respectable chemists' shops, to be worn round the necks of young children, when cutting their teeth, as "anodyne necklaces." Can we be severe on the follies of our ancestors when such superstitions linger in our own day?

EXCLUDED SPECIES.

RANUNCULUS ALPESTRIS. *Linn.*

E. B. 2390.

Said by the late Mr. George Don to occur "by little rills and among rocks on the mountains of Clova," Forfarshire. Though these mountains have been carefully examined, this conspicuous plant has been seen by no other collector; and no doubt Mr. Don made some mistake in thinking he found it there.—(See Watson's "Cybele Britannica," Vol. I. p. 82.)

RANUNCULUS GRAMINEUS. *Linn.*

E. B. 2306.

"Brought from North Wales by Mr. Pritchard;" according to Withering, no doubt through mistaking R. Flammula for this species.

ORDER II.—BERBERIDACEÆ.

Herbs or shrubs with radical or alternate simple or compound leaves, generally without stipules. Flowers usually perfect, regular. Sepals and petals in 2 or more whorls, with 2 or 3 in each whorl, very caducous. Stamens definite, 4 to 6 (rarely more), in 2 rows, opposite the petals, hypogynous, generally free. Anthers erect, with the cells extrorsely adnate or lateral, opening by valves detaching themselves from the base upwards, or more rarely by longitudinal clefts. Ovary free, consisting of a single 1-celled carpel (rarely of several distinct carpels). Stigma sessile or subsessile, dilated, peltate or conical. Ovules 2 or more, anatropous, with the raphe ventral. Fruit an indehiscent berry, with 1 or many seeds, or (more rarely) resembling a capsule, dehiscent or indehiscent. Embryo straight or gently curved, with the radicle pointing towards the hilum. Albumen copious, between fleshy and horny.

Most authors confine the Berberidaceæ to the species in which the anthers open by valves; but Bentham and Hooker, in their

Genera Plantarum," include in this order the Lardizabaleæ and the genera Nandina and Podophyllum, in which the anthers open by slits in the usual way.

GENUS I.—**BERBERIS.** *Linn.*

Sepals deciduous, petaloid, 9, in 3 whorls, those in the outer whorl (bracteoles ?) much smaller than the others, those in the inner whorls spreading. Petals 6, in two rows, generally a little smaller than the sepals, most usually concave and connivent, commonly with 2 glands near the base. Stamens 6. Anthers with 2 valves opening upwards. Pistil solitary, with a peltate stigma. Ovules few, erect, growing from the base of the carpel. Berry indehiscent, usually 2-seeded. Embryo large.

Shrubs with yellow wood and pinnate leaves; the leaflets reduced to 1 and the primary leaves to spines in some species; leaflets spinously serrate. Flowers yellow, in racemes, or rarely solitary.

SPECIES I.—**BERBERIS VULGARIS.** *Linn.*

PLATE LI.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XVIII. Fig. 4486.

Primary leaves reduced to trifurcate spines; secondary leaves in fascicles, produced from the axil of the spines, simple, subsessile, obovate-elliptical, margin serrate, with the teeth terminating in small spines. Racemes pendulous. Berries oblong-ovoid.

In hedges and thickets. Rather frequent. A doubtful native in Scotland.

England, [Scotland,] Ireland. Shrub. Early Summer.

Stems woody, much branched, 3 to 6 feet high, with ash-coloured bark. Primary leaves on the woody shoots transformed into trifurcate spines with an enlarged base, the spines on the upper part of the branch often simple; secondary leaves in fascicles from the axils of the spines, elliptical-obovate, tapering at the base into a short footstalk, finely serrate, with the serratures terminated by short cartilaginous spines or bristles; leaves of the barren shoots of the year alternate, presenting various gradations from leaves into spines, into which they become transformed in succeeding years. Racemes produced from the fascicles of secondary leaves, pendulous, shortly-stalked, exceeding the leaves. Bracts much shorter than the pedicels, triangular, acute, keeled. Flowers about $\frac{3}{8}$ inch across. Sepals ovate, in 3 whorls alternate with each other; those in the outermost whorl (bracteoles?) acute; in the second, about twice as long and obtuse; in the innermost of all the longest, about equal to the petals. Petals concave, connivent, obovate, yellow, with 2 orange glands at the base. Stamens lying in the concavity of the petals until the the filament is touched on the inner side, when they instantly spring up and take a position closely applied to the pistil. Anthers with 2 circular valves, which open upwards, and when in this state resemble auricles at the top of the anther. Pistil with a large discoid stigma, broader than the ovary. Berries $\frac{1}{2}$ inch long, oblong, very slightly curved, orange with one side red, or entirely red.

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* The Plate is re-drawn from E. B. 49, with corrections by Mr. J. E. Sowerby.

A smooth, bushy shrub, with pale-green, thin, deciduous leaves. Flowers with a faint pleasant odour. The fruit and also the leaves have an agreeable acid flavour.

Common Barberry.

French, *Épine Vinette.* German, *Sauerdorn.*

Berberys is the Arabic name of the fruit, and βερβερυ (*berberu*) in Greek signifies a pearl-oyster. Many authors believe the name is derived from this word, because the leaves are glossy, like an oyster shell; and Bochart says the same word is derived from a Phœnician word, *barar*, which expresses the brilliancy of a shell, alluding to their shining leaves. The leaves of the Barberry are pleasantly acid, and the flowers, although not of an agreeable scent when very near, are by no means offensive at a distance. The berries are very acid, so much so that birds will not eat them; when boiled with sugar, however, they form a very agreeable preserve, and as a garnish, when ripe, they are much admired for their bright colour and delicate form. Their sensibly astringent properties were sure to secure for them a medicinal reputation, in an age when remedies were multiplied for every disorder, and faith was still unshaken in the power of medicine. We are informed that the Egyptians still employ them in pestilential fevers, and Simon Paulli relates that he was cured of a malignant fever by using these berries macerated in water and drinking it. Woodville, in his "Medical Botany," recommends an infusion of Barberries as a beneficial drink in fevers; but it is very certain that they have no virtue beyond that of any acid fruit, whose sharpness communicated to the water renders it a pleasant beverage. Gerarde recommends the leaves "to season meat with, and instead of a salad." The roots are bitter and astringent, and if boiled in lye will dye wool yellow. In Poland, leather is dyed of a beautiful yellow colour in this way. An infusion of the roots in wine or beer is purgative, and is said to be good in the jaundice. In many parts of Europe a certain injurious property is attributed to this shrub, which, however, is not substantiated by recent observations. Farmers and others have asserted that wheat planted near a Barberry-bush seldom arrives at perfection or fills in the ear. Its influence in this respect is supposed to extend to some three or four hundred yards. The village of Rollesby, in Norfolk, where Barberries abound, and wheat seldom succeeds, is known by the appellation of Mildew

Rollesby. The reason of this apparent blight on wheat in certain situations, and its connection with the Barberry-bushes in the neighbourhood, has puzzled many observers. Some attribute it to the farina of the Barberry, which is yellow, and resembles in some degree the appearance of rust; and others have suggested that a little yellow fungus which attacks the leaves of the Barberry may spread to the ears of wheat. More recent Botanists have remarked that insects of various kinds are remarkably fond of the flowers of the Barberry, and in this way the pollen may be conveyed to other plants, and produce the appearance of mildew; or it is said that the Æcidium Berberidis, its particular fungus, may generate the dust which, carried from the bush by the wind and lighting on the wheat, gives rise to Puccinia, a minute fungus, which closes up the pores of the leaves, and produces the rust or mildew. M. Broussonet, the celebrated French naturalist, who directed his attention particularly to agriculture, assured Sir J. E. Smith that the report of the ill effects caused by the proximity of Barberries to corn-fields is, from his own observation, totally void of foundation.

GENUS II.—EPIMEDIUM. *Linn.*

Sepals deciduous, petaloid, 8, in 2 whorls, those in the outer whorl smaller and less coloured. Petals 4, extremely concave, the concavity produced so as to form a hollow conical cup, deeper than wide, and attached by the lower edge of the lip; sepals and petals opposite. Stamens 4; anthers with 2 valves opening upwards. Carpel solitary. Style reaching to the top of the stamens, with a small discoid stigma. Ovules numerous, in 2 rows along the ventral suture. Fruit membranous, irregularly ovoid, tipped by the terminal style, splitting into two valves, of which the inner one is the smaller. Seeds large, oblong, with the raphe much enlarged at the base. Embryo slightly curved.

Herbs with a creeping rhizome. Leaves radical, or on the short stem, biternate, ternate, or pinnate.

SPECIES I.—EPIMEDIUM ALPINUM. *Linn.*

PLATE LII.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XVIII. Fig. 4485.

Stem leaves 1 or 2, biternate. Leaflets ovate, heart-shaped. Sepals ovate, rather acute. Style a little overtopping the anthers.

Naturalized in a few places in the North of England and Scotland; Bingley Woods, Yorkshire; on Carrick Fell and Skiddaw,

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* The Plate is E. B. 438, with the dissections corrected and the fruit added by Mr. J. E. Sowerby.

Cumberland; Westmoreland; Mugdoch Castle, near Glasgow; and Cleish Castle, Kinross-shire. I possess specimens collected by Mr. W. H. Campbell at "Saline, Fife;" but as Saline is very near Cleish, it may be the same locality as the previous.

[England, Scotland]. Perennial. Spring.

Rootstock creeping, branched, scaly at the tips of the divisions, which produce either stems or radical leaves, but not both together from the same point. Stem erect, 1 to 2 feet high, with 1 or 2 leaves above the middle. Leaves stalked, biternate; leaflets stalked, 1½ to 3 inches long, ovate-acuminate, very faintly serrated, the serratures terminating in short bristles; base cordate, with the lobes equal in the terminal leaflet of each triad; unequal, having the outer lobe much the larger in the two lateral ones. Peduncle terminal, but appearing to be lateral, as the leaf-stalk rather than the peduncle seems to be a continuation of the stem. Flowers about ½ inch in diameter, drooping in a lax panicle with short lateral branches. Sepals brownish-purple, the two whorls, one directly within the other, spreading in the form of a cross. Petals (nectaries of many authors) yellow, lying within the sepals, and rather shorter than those of the inner whorl. Stamens 4 in number, connivent. Fruit ovoid, about ½ inch long. Seeds rather few, large, oblong-ovoid, maroon colour, the enlarged raphe resembling an arillus. Leaves pale green, glabrous. Peduncle and pedicels with scattered spreading reddish hairs terminating in glands, and there is also a small tuft of similar hairs in the axils of the forks of the petiole.

This plant is usually described as destitute of radical leaves, which probably means that there are no leaves produced at the base of the stem, for the branches of the rhizome which do not produce stems certainly send up radical leaves. These cannot be considered as barren stems terminating in a leaf, as the base of the leaf-stalk on the flowering stems is furnished with small purplish-brown stipules with free auricles, and there is nothing similar to this to be found on the stalks of the root-leaves which might lead us to consider their leaf-stalk composed partly of stem and partly of petiole.

Alpine Barren Wort.

French, *Le Chapeau d'Évêque.* German, *Bischofsmütze.*

The generic name is derived from επι (*epi*), upon, and *Media.* It is said by Dioscorides to grow in Media, in Asia Minor.

ORDER III.—NYMPHÆACEÆ.

Aquatic herbs with submerged rhizomes, sending up leaves and 1-flowered scapes, or more rarely swimming leafy branches. Leaves peltate or cordate at the base, usually floating, more rarely rising out of the water. In some species there are membranous submerged leaves, as well as floating ones of a thick, firm texture. Flowers generally floating. Sepals 4 or 5, more rarely 3 or 6. Petals usually numerous, but sometimes only 3. Stamens indefinite, rarely definite, free and hypogynous, or more or less attached to the disk, which often includes the carpels, so that the stamens become even epigynous, and various intermediate forms occur between the two; anthers erect, adnate, opening by longitudinal slits. Carpels usually numerous, rarely only 3, generally more or less embedded in and surrounded by an expansion of the torus; or united with it, so as to form a many-celled, superior, half-superior, or inferior compound ovary; more rarely quite free and distinct, merely placed upon the torus. Styles sometimes united by their edges so as to form a disk: stigmas adnate to the styles, radiating or forming an interrupted ring; distinct where the carpels are free or separately imbedded in the torus. Ovules orthotropous, numerous, attached to the partitions of the carpels, or solitary and pendulous from the apex of the carpel. Fruit indehiscent, often more or less fleshy or spongy. Seeds albuminous (except in Nelumbium), frequently with a fleshy arillus. Embryo near the hilum of the seed, enclosed in a vitellus, which separates it from the farinaceous albumen.

Mr. Bentham and Dr. Hooker judiciously combine with the order Nymphæaceæ as generally received, the Cabombeæ and Nelumboneæ, which do not differ from it more than the various sub-orders of Rosaceæ do from each other.

GENUS I.—NYMPHÆA. *Linn.*

Sepals 4, persistent, inserted nearly at the base of the torus. Petals numerous, in several rows, passing gradually into stamens, and with them inserted into the torus which surrounds the carpel. Exterior stamens with petaloid filaments, and the anther lobes on their inner faces shorter than those of the interior ones; filaments of the exterior stamens petaloid, bearing on their inner faces anther lobes, which are shorter than those of the interior stamens, the filaments of which are strap-shaped. Carpels numerous, immersed in a fleshy torus, in which they are arranged in a ring, and with it united to form a half-inferior compound ovary, with as many cells as there are carpels; summit of the ovary concave, with a small globose or conical process, formed by the excurrent summit of the torus which passes between the carpels. Stigmas radiating, as many as the carpels, each style with an incurved appendage extending beyond the stigma and edge of the summit of the ovary. Ovules numerous, pendulous from the sides of the carpels. Fruit a spongy berry, ripening under the water, and bearing on its surface scars left by the decay of the petals and stamens. Seeds imbedded in pulp, with a succulent arillus open at the apex.

Flower white, red, or blue.

SPECIES I.—**NYMPHÆA ALBA.** *Linn.*

PLATE LIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. VII. *Nymph.* Tab. LXVII. Fig. 117.

Leaves nearly round, entire, with a deep sinus at the base, lobes approximate. Rays of the stigma 15 to 20, yellow.

Var. α, *major*.

Flowers 4 or 5 inches in diameter. Stigma with about 18 rays.

Var. β, *minor*.

Flowers 3 inches in diameter, or even less. Stigma with the rays seldom exceeding 16.

Not unfrequent, and generally distributed in lakes, ponds, and ditches from Cornwall to Shetland. Var. β less common than α, and probably a state rather than a variety.

England, Scotland, Ireland. Perennial. Summer.

Rhizome thick and fleshy, horizontal, creeping in the mud, producing leaves and flowers from the apex. Leaves 4 to 9 inches in diameter, on long stalks, floating on the surface of the water,

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* The Plate is E. B. 160, with additional dissections by Mr. J. E. Sowerby.

sub-coriaceous, palmately-veined, roundish, with a deep sinus at the base; lobes more than one-third the length of the leaf, approximate, often hiding the petiole. Flowers floating, cup-shaped, open. Sepals oblong, lanceolate, olive on the exterior, with the margins paler, pure white, like the petals, interiorly. Petals oval or elliptical, blunt, those of the outer whorl longer than the sepals, the interior ones becoming smaller towards the centre of the flower. Anthers and innermost filaments yellow. Stigmatic rays yellow. Fruit globose. Plant glabrous. Leaves all floating, green and shining above, dull and often purplish beneath.

White Water-Lily.

French, *Nénuphar Blanc.* German, *Die Weiss Seerose.*

Nymphæa is derived from *νυμφη* (*nymphe*), a water-nymph, in reference to the habitation of these plants. As the Rose is the queen of the bower, so undoubtedly the Lily is the empress of the lake, and we may almost endorse her poetical Indian name "Camada," or "Delight of the Waters." The lovely purity and delicacy of the White Water-Lily can scarcely be exaggerated, but perhaps it is only when seen in its favourite haunts in profusion and perfection that we can fully enter into the fervid descriptions of some of our British poets. In Japan, either natural or artificial White Water-Lilies are borne in the funeral processions of young persons, as emblems of purity. Like the sacred Lotus of the Nile, the flowers of our White Water-Lily rise and expand as the day advances and the sun gains strength, closing again at evening, sleeping as it were through the hours of darkness, until called into life again by the warm rays of light. Moore poetically describes this natural process:—

> "Those virgin Lilies all the night
> Bathing their beauties in the lake,
> That they may rise more fresh and bright
> When their beloved sun 's awake."

The stimulus of the sun's rays seems to have relation to the fertilization of the plant. The pollen if scattered beneath the water would be washed away and decomposed, while on the expanded raised flower it is received without injury. This is truly the object for which—

> "The Water-Lily to the light
> Her chalice rears of silver white.

The Water-Lily may be transplanted from its native home by placing the thick rhizomes in baskets of earth and fastening stones to them, so as to keep them well under water, and nothing can be more lovely than a calm lake, on whose bosom may be seen floating numbers of these snowy nymphs. The thick stems have a bitter astringent taste, but are free from any poisonous qualities. In Ireland and the island of Java the tuberous rootstocks are used to dye a dark brown colour. They have been used in medicine, and esteemed narcotic. In China starch is obtained from them for dietetical purposes.

GENUS II.—NUPHAR. *Sm.*

Sepals 5 or 6, concave, coriaceous, hypogynous. Petals numerous, much smaller than the sepals, in 2 whorls, inserted with the stamens beneath the ovary, to which they do not adhere. Filaments all strap-shaped, with introrse anthers. Carpels numerous, arranged in a ring, and combined so as to form a superior compound ovary, with as many cells as there are carpels. Stigmas linear, radiating, adnate to a peltate disk which terminates the ovary, and is formed by the styles cohering by their edges. Fruit sub-globose, leathery, smooth.

SPECIES I.—NUPHAR LUTEA. *Sm.*

PLATES LIV. LV.

Reich. Ic. Fl. Germ. et Helv. Vol. VII. *Nymph.* Tab. LXIII. Fig. 113.

Leaves oval, with a deep sinus; lobes contiguous. Petals broadly obovate-cuneate. Anthers three or four times as long as broad. Stigmatic disk entire, or faintly waved at the edge, not lobed; stigmatic rays not extending to the edge of the disk.

Var. *α*, *major*.

PLATE LIV.*

Flowers about 2½ inches in diameter. Stigmatic disk quite entire, with 15 to 20 rays.

Var. *β*, *minor*.

PLATE LV.

N. intermedium, *Ledebour*, Fl. Ross. Vol. I. p. 85. *Fries*, Summ. Veg. Scand. p. 144.

Flowers about 1½ inch in diameter. Stigmatic disk slightly waved at the edges, with 10 to 14 rays.

In lakes, ponds, and ditches. Var. *α* not uncommon in England, but rather rare in Scotland, where Aberdeenshire and Argyleshire appear to be the northern limits. Var. *β* in Chartner's Loch, Northumberland.

England, Scotland, Ireland. Perennial. Summer, Autumn.

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* The Plate of var. *α* is E. B. 159. Var. *β* is from a drawing in the British Museum, prepared by Mr. Sowerby for the original edition of E. B., but not hitherto published.

Rhizome creeping in the mud, producing from the apex peduncles and leaves of two sorts, viz.—submerged leaves on rather short stalks, thin and membranous, translucent, waved; and floating leaves, sub-coriaceous in texture, much resembling those of Nymphæa alba, but longer in proportion to their breadth, and with a greater number of veins arising from the mid-rib, so that the leaf is less palmately veined than in that species; lobes about one-third of the whole length of the leaf, approximate; submerged leaves similar in form. Petioles bluntly trigonous. Flowers rising above the water, cup-shaped, ellipsoidal. Sepals very large, concave, oval, externally greenish, bright yellow within. Petals 18 to 20, about ½ inch long, obovate, wedge-shaped, bright yellow, thick in texture, shining exteriorly, where there is a nectariferous pore near the top, with prominent lines on the inside. Stamens very numerous, with broadly strap-shaped filaments: anther cells on the inner surface of the filament, with parallel lobes much longer than broad. Stigmatic disk much wider than the top of the ovary, with from 10 to 20 stigmatic rays not reaching to the edge of the disk. Fruit sub-globose or ovoid, attenuate at the summit, and terminated by the large stigmatic disk, which appears to be formed by the cohesion of the styles, which are free in Nymphæa. Plant nearly glabrous. Floating leaves shining above, dull green beneath. Flowers with a fragrant odour.

Yellow Water-Lily, Water-Can, Brandy-Bottle.

French, *Nuphar Jaune.* German, *Die Gelbe Teichrose.*

The generic name is from *Naufar* or *Nyloufar*, the Arabic name of Nymphæa. It is the νουφαρ of Dioscorides. This bright-coloured Lily is almost as attractive in its golden radiance as its more modestly attired and charming sister. "In golden armour glorious to behold," it forms a beautiful object on the surface of a lake or river. The blossom has a somewhat powerful and not very refined or pleasant smell, resembling ardent spirits; hence the common name sometimes given to the plant of Brandy-Bottle. The Greeks prepare a cordial from the flowers. The rootstocks contain a considerable quantity of starch, as do also the seeds. Some persons boil the seeds, when they are said to have a pleasant nutty flavour. The leaves have been used as a styptic. All parts of the plant contain tannic acid, and are useful in tanning, especially the rootstocks. The prostrate stems rubbed with milk are a reputed poison for crickets and cockroaches. An infusion of the rootstock (known as the root) in water, was long considered a specific in eruptive diseases of the skin. The tropical species of Nymphæaceæ have wonderfully tinted blossoms of blue and crimson. An allusion to the near alliance of these British Water-Lilies with the magnificent Water-Lily of the West—the Victoria Regia,—whose flowers are often fifteen inches in diameter, and whose leaves frequently measure six feet and a half across, may perhaps be excused. All lovers of floral beauty should give themselves the treat of seeing these magnificent flowers in the aquatic greenhouse at Kew, or in the Regent's Park Botanical Gardens, where, in the season, they blossom in perfection.

SPECIES II.—NUPHAR PUMILA. *Sm.*

PLATE LVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. VII. *Nymph.* Tab. LXV. Fig. 115.
N. lutea, var., *Benth.* Handbook Brit. Fl. p. 70.
N. minima, *Sm.* Eng. Bot. ed. i. No. 2292.

Leaves broadly oval, with a deep sinus; lobes diverging from the petiole at least towards their tips. Petals oblong, spathulate. Anthers less than twice as long as broad. Stigmatic disk lobed at the edge, the lobes extending about one-third of the way to the centre; stigmatic rays extending to the extremity of the lobes of the disk.

In lakes. Very rare. Ellesmere, in Shropshire; Mugdoch Loch, near Glasgow; Loch of Menteith, near Stirling; and a few other small lochs in the East and West Highlands.

England, Scotland. Perennial. Summer and Autumn.

Similar to the last, especially to the variety β. Floating leaves broadly oval, with a deep sinus, the edges of the lobes parallel at the base, and diverging towards the tips. I have not seen British specimens with submerged leaves; Professor Babington describes them as reniform; in French specimens from Vosges they are very shortly ovoid, or nearly circular, with the lobes diverging at an angle of from 40 to 60 degrees. Petioles 2-edged. Flowers very similar to those of variety β of the preceding species, 1¼ to 1½ inch in diameter, but the petals are narrower, and suddenly contracted below, the anthers much shorter, their length not being more than once and a half their breadth, and the margin of the stigmatic disk is scalloped. The stigmatic rays are only 8 or 10 in number, and reach to the edge of the disk.

I have seen no British specimens of the variety ? with elongate anthers (N. spennerianum, Gaud.), though it occurs both in Vosges and in Lapland. My specimens from Vosges belong to the ordinary form of N. pumila, so that both forms must exist in that district.

Least Water Lily.

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* The Plate is E. B. 2292, with the dissections corrected.

ORDER IV.—PAPAVERACEÆ.

Annual or perennial herbs, or (very rarely) shrubby plants, often with coloured milky juice. Leaves alternate, exstipulate. Flowers perfect, regular or (in the Fumarieæ) irregular. Sepals 2 or 3, rarely 4, imbricated, very caducous. Petals 4 or 6, rarely 8 or 12, hypogynous, free, often corrugated, deciduous. Stamens hypogynous, indefinite, free, except in the Fumarieæ, where they are definite, with the filaments commonly united into 2 bundles. Ovary free, 1-celled, with parietal placentæ, which are sometimes nerve-like, sometimes projecting inwards, sometimes even united in the centre, so as to form a many-celled ovary; and in a few cases 2 nerve-like placentæ are connected by a spurious dissepiment, thus making a 2-celled ovary. Style short or absent; stigmas equal in number to the placentæ, radiating on a disk to which they are adnate on the summit of the ovary, or distinct. Ovules anatropous, ascending or horizontal. Fruit a capsule, opening by pores or valves; indehiscent and 1-seeded in some of the Fumarieæ. Seeds globose, or reniform-ovoid. Embryo minute, near the base of fleshy albumen containing fixed oil.

SUB-ORDER I.—PAPAVERIÆ. *Linn.*

Petals nearly alike. Stamens indefinite, free.

GENUS I.—PAPAVER. *Linn.*

Sepals 2, rarely 3, herbaceous, very caducous, falling off when the flower opens. Petals 4, crumpled in æstivation, caducous. Stamens indefinite. Capsule globose, ovoid, or clavate, 1-celled, with placentæ projecting more or less into the interior, and forming imperfect partitions. Stigmas 4 to 20, sessile, radiating upon a flat or convex disk at the top of the capsule. Capsule opening by small scale-like teeth underneath the edges of the expanded disk. Seeds very numerous, punctured, without a strophiole.

Herbs, often glaucous, with white or pale yellowish sap. Leaves often lobed or dissected. Flowers solitary, erect, drooping in bud, the sepals falling off when the flower opens.

French, *Pavot.* German, *Mohn.*

The generic name is derived from *papa*, pap or thick milk, or *pappare*, to eat of pap. This may have arisen either from the milky nature of the juice of the Poppy, or

because it was at one time given to children in their pap, or food, to make them sleep. We are also told that the seeds, having a pleasant nutlike taste, and being innocuous, and without any soporific qualities, have been considered a good addition to the food of children.

SPECIES I.—PAPAVER SOMNIFERUM. *Linn.*

PLATE LVII.

Leaves sinuated, lobed or toothed at the margins, the uppermost ones amplexicaul; filaments dilated towards the top. Capsule smooth, globular or ovoid, stipitate. Stigmatic disk deeply lobed. Lobes oblong, rounded, not contiguous. Stigmatic rays 8 to 15, rather slender, not extending quite to the apices of the lobes of the disk.

SUB-SPECIES I.—Papaver hortense. *Hussenot.*

PLATE LVII. (A.)*

P. somniferum, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XVII. Fig. 4481.
P. hortense, *Hussenot,* Chard. Nanc. p. 39. *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 58. *Godr.* Fl. de Lorr. ed. i. Vol. I. p. 36.
P. setigerum, *Godr.* Fl. de Lorr. ed. ii. Vol. I. p. 35. London Catalogue, No. 43 * (non *D. C.*)
P. somniferum, var. nigrum, *D. C.* Fl. Fr. Vol. IV. p. 633. *Brebisson,* Fl. de la Normandie, ed. iii. p. 14.
P. somniferum, var. setigerum, *Godr.* Fl. de Lorr. ed. ii. Vol. I. p. 35. *Coss.* & *Germ* Fl. des Environs de Paris, ed. ii. p. 93.
P. somniferum, *Gmel.* Bad. Als. Vol. II. p. 479. *Boreau,* Fl. du Cent. de la Fr. ed. iii Vol. II. p. 31. *Lowe,* Man. Fl. of Madeira, p. 11.

Capsule globular, stipitate, opening by minute valves or teeth Rays of the stigmatic disk spreading nearly in one plane. Seeds black, brown, or dark grey.

A weed in cornfields, and a straggler on waste places and newly-turned soil. Local. Abundant in cornfields at Greenhithe, Darenth, Cobham, and several other places in Kent, where it seems as well established as the common red Poppies; but this is the only county where I have seen it in the same places year after year. Professor Babington mentions that in the Fens "P. somniferum" (by which I suppose the present plant is intended) is still occasionally to be seen, the seeds having probably been buried for many years, as the plant is stated to have been largely cultivated at a former period in that district. On the south coast it is frequently met with, and occasionally a few plants may be seen in waste ground to the north of Cambridge and Norfolk.

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* The Plate is "P. somniferum," E. B. 2145, with a capsule (A) added by Mr. J. E. Sowerby.

England. Annual. Late Summer.

Stem erect, 1 to 3 feet high, branched in the larger specimens. Lower leaves oblanceolate, attenuated at the base; upper leaves lanceolate-oblong, amplexicaul, cordate at the base; the margins pinnatifidly lobed, or having large teeth, the extreme margin somewhat cartilaginous. Peduncles generally with stiff, spreading, scattered hairs. Sepals quite smooth, falling off before the flower is fully expanded, as is the case throughout the genus. Petals 4, overlapping each other, the two outer much broader than the inner, which is also a character of general occurrence. In the wild state the flowers are from 3 to 4 inches across, white, tinged with pale lilac, with a large, oblong, wedge-shaped, deep purple blotch at the base. Filaments as long as the pistil, slender below, becoming broader towards the top, but again contracted below the anther. Pistil globular, stipitate, the lobes of the stigmatic disk reflexed, the stigmatic rays prominent, not reaching quite to the termination of the lobes. Capsule globular, about 1 inch in diameter in full-sized examples, distinctly stipitate, the stigmatic disk spreading horizontally; the lobes divided nearly half way to the centre; teeth triangular, leaving small openings, which allow the dark-coloured reniform seeds to escape. The seeds are very numerous, and are attached to the imperfect partitions, which reach about half way to the centre of the capsule. Whole plant smooth, with the exception of the occasional presence of hairs on the peduncle, very glaucous, the green colour of the plant being strongly obscured by a bluish-white tinge.

In gardens this plant has red, purple, or maroon-coloured flowers; but I have never seen wild specimens with petals of those colours.

SUB-SPECIES II.—**Papaver officinale.** *Gmel.*

PLATE LVII. (B.)[*]

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XVII. Fig. 4481.
Gmel. Bad. Als. Vol. II. p. 479.
P. somniferum, var. officinale, *Coss.* & *Germ.* Fl. des Environs de Paris, ed. ii. p. 93. *Brebisson,* Fl. de la Normandie, ed. iii. p. 14.
P. somniferum, var. macrocarpum, *Coss.* & *Germ.* Fl. des Environs de Paris, ed. i. p. 73.
P. somniferum, var. album, *D. C.* Syst. Vol. II. p. 82.
P. somniferum, *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 57. *Godr.* Fl. de Lorr. Vol. I. p. 34. London Catalogue, No. 43.

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[*] A capsule of this species is given in Plate LVII., from a drawing by Mr. J. E. Sowerby.

Capsule ovoid, or in the cultivated form globular-depressed, indehiscent. Rays of the stigmatic disk spreading, slightly incurved at the apex. Seeds white.

Occasionally found in waste places, but has no claim to be considered even as naturalized. There is a specimen in the British Museum from Battersea meadows, collected by the late Mr. E. Forster. Possibly some of the stations recorded for "P. somniferum" belong to P. officinale.

[England.] Annual. Late Summer.

Very similar to P. hortense, but larger in all its parts. Leaves of a yellower green, much less glaucous, and with the teeth closer and smaller in proportion to the size of the leaf and its lobes than in that sub-species. Flowers 4 to 7 inches in diameter, pure white, without any spot at the base of the petals. Capsule in this country ovoid (even when raised from the seed of the foreign variety with depressed capsules), 2 to 3 inches long, more leathery in texture than that of P. hortense.

Besides these two sub-species, P. somniferum includes a third, which occurs in the South of Europe, Madeira, etc. This is P. setigerum (D. C. Fl. Fr. Vol. V. p. 585; Gr. & Godr. Fl. de Fr. Vol. I. p. 38; and Lowe, Man. Fl. of Madeira, p. 11, where a very excellent description of it is given). It differs from the two preceding sub-species in being dull smoky green, scarcely glaucous, with many more stiff hairs on the peduncles, calyx, and leaves, and in the capsule being oblong, pear-shaped, and scarcely stipitate.

Sleepbearing Poppy, Garden Poppy, White Poppy, Opium Poppy.

French, *Pavot Somnifère.* German, *Gartenmohn, Maysamen, Oelmagen.*

The specific name Somniferum is applied to this plant on account of its narcotic properties. There appears to be good reason to believe that of the two sub-species of Papaver somniferum, P. hortense is the origin of the Garden Poppies, and P. officinale the true cultivated Opium Poppy, which is but rarely met with wild in Great Britain. This Poppy is valuable for its juice, which, when extracted and dried, forms opium; and for its capsules or seed-vessels, known as Poppy-heads. The whole of the plant, excepting the seeds, partakes of the well-known narcotic properties, and abounds in a white milky juice, which has a heavy nauseous smell. The seeds seem to be innocuous, and have been used as food. In Persia and some parts of Germany they are sprinkled over rice and wheaten cakes, and are considered agreeable. They are also sent to table mixed with honey. This appears to be a practice of great antiquity. Gerarde, quoting Galen, says, "This seed is good to season bread with; it is often used in comfits, served at the table with other junketing dishes." Cage birds are largely fed on these seeds, under the name of maw seeds. The largest quantity of the narcotic substance is yielded by the capsules of the plant, and for this purpose it is chiefly cultivated, both in this and other countries.

When these are in the green state, and more especially when near maturity, they abound in a thick white juice, which flows freely from incisions, and dries and hardens in the air into a pale-brown, tough, adhesive substance. This is opium. The mode of obtaining it seems to be nearly the same now as in the days of Dioscorides. At sunset longitudinal incisions are made upon each half-ripe capsule, passing from below upwards, and not penetrating to the internal cavity. The night dews favour the exudation of the juice, which is collected in the morning by women and children, who scrape it off the wounds with a small iron scoop, and deposit the whole in an earthen pot, where it is worked by wooden spatules in the sunshine until it attains a considerable degree of thickness. It is then formed by the hand into cakes, laid in earthen vessels, and covered with leaves. This method varies but little in whatever country the opium may be collected. The finest opium of Asia Minor comes to us in very small pieces, from the appearance of which it is supposed that the original tears or drippings of juice are allowed to dry without any manipulation. The culture of Poppies in England, for the sake of their opium, is not, on the whole, an extensive or profitable operation. The most satisfactory experiment of this kind was made by Messrs. Cowley and Staines, in 1823, in Buckinghamshire, on a plot of 12 acres of land, which yielded 196 pounds of very fine opium, or about 16 pounds per acre. This was a remunerating produce at the time, but the great reduction which has since taken place in the price of foreign opium would be fatal to such an undertaking now. There are five kinds of opium, more or less known to druggists, namely, Turkey, Egyptian, East Indian, European, and Persian opium. The two first are the sorts chiefly consumed in this country. Opium was first analysed by M. Sertuerner, a Hanoverian chemist, in 1812; and was demonstrated to consist of certain alkaloids and other principles, the most important of which was Morphia. Until this time no vegetable alkaloid had been discovered, and the importance of Sertuerner's researches was speedily recognised. So far as opium has been analysed by this chemist, and others since his time, its essential constituents are three alkaloids—1. Morphia; 2. Codeia; 3. Paramorphia: and three neutral principles—4. Narcotin; 5. Narcein; 6. Meconin. The alkaloids are combined with meconic and sulphuric acids; but the great bulk of the substance of opium is composed of gum, albumen, resin, oil, and caoutchouc. The presence of this latter substance is indicated by the milky nature of the juice of the plant. The various preparations of the active principles of opium give ample opportunity for the skill of the chemist; and in the Pharmacopœias of London, Edinburgh, Dublin, and other parts of Europe we find many varieties prescribed. In its action opium varies, and is modified by circumstances. From the earliest times it has been known as a powerful narcotic agent, acting on the brain and producing a tendency to sleep. On this account, chiefly, it has been used in medicine, either in its combined condition as pure opium, or in the form of morphia, which exists in the proportion of one per cent. in all good opium. To no other agent does man owe so deep a debt for the alleviation of his pain and sorrow in disease as to this. It would be altogether impossible to mention here the medicinal properties of opium. Suffice it to say, that while its primary action seems to be to subdue the activity of the brain and produce sleep, it acts generally on the nervous system. The sympathetic nerves, the nerves of motion and sensation, and the spinal cord, are all alive to its action; and where the object in the treatment of disease is to diminish their activity, opium is employed. The actions and uses of morphia closely resemble those of the crude drug; in some cases, however, where unpleasant subsequent results accompany the administration of opium, the alkaloid is free from like effects. We may readily imagine that an agent possessing such power was not likely to escape the tendency of mankind to employ as luxuries all substances affecting pleasurably the nervous system. In countries where the prevailing religion forbids the use of alcohol, as in Turkey, it is in constant use as an indulgence, which, if once permitted, is seldom or never abandoned. The Turks call it *afioni*, and in the opium-shops of Constantinople they take it in graduated doses from 10 to 100 grains a day. It is mixed with rich syrup and the inspissated juices of fruit, to render it more palatable and less intoxicating. It is taken with a spoon, or made up into lozenges stamped with the words *Mash Allah*, literally meaning *the Work of God*. It is also smoked. The Tartar couriers, who travel great distances and with astonishing rapidity, take little else to support them in their journeys. The pernicious practice of habitually taking opium has gradually found its way throughout the East, and has become the besetting sin of the Chinese. It impairs the digestive organs, and thus undermines the vigour of the whole body; gradually its effects are seen on the mental energies. The memory soon fails; the victim to this habit becomes prematurely old; and one of the greatest blessings, given to man to use in a time of necessity and pain, is thus turned into a curse: frightful indeed are the sufferings of an opium-eater after the action of his dose has subsided. In the well-known work entitled "Confessions of an English Opium-Eater" is a vividly painful account of the fascination which draws victims into habits of confirmed indulgence in opium intoxication. The passive pleasurableness and languishing enjoyment, the almost ecstatic condition of the opium-eater during the activity of his dose, are here wrought into a sort of romance, which describes most graphically the irresistible nature of this pernicious indulgence. It is indeed an agent which can

"Raze out the written troubles of the brain,
And with a sweet oblivious antidote
Cleanse the full bosom of that perilous stuff
Which weighs upon the heart."

Knowing its power and its fascinations, all who from disease and necessity are compelled to use it, do well to feel thankful for so beneficent a provision of Providence to allay pain, and secure the greatest of all Nature's sweet restorers, "balmy sleep;" but should beware of being led into the abuse of so kindly a gift, not less to be dreaded in its effects than the fumes of alcohol. It is related in mythological traditions, that some prepared and flavoured infusion of opium administered to the sensual enjoyments and debauchery of the denizens of Olympus. Milton alludes to such potations in "Comus:"—

"And first, behold this cordial julep here,
That flames and dances in the crystal bounds,
With spirits of balm and fragrant syrups mix'd;—
Not that Nepenthes, which the wife of Thon
In Egypt gave to Jove-born Helena,
Is of such power to stir up joy as this."

The bright-growing flower and green leaves of the Poppy plant, in the field or the garden, would scarcely suggest the important properties, powerful both for good and evil, contained in its sap. Its hanging head and drooping unopened flowers, appearing almost as though overcome with sleep and lethargy themselves, have frequently been noticed. Homer alludes to it:—

"As brilliant Poppies, overcharged with rain,
Recline their heads, and droop above the plain,
So sinks the youth."

The silken tissue of the petals has been said by Theocritus to prove an index to the state of a lover's affections; thus:—

> "By a prophetic Poppy-leaf I found
> Your changed affection, for it gave no sound
> Though in my hand struck hollow as it lay,
> But quickly wither'd, like your love, away."

SPECIES II.—PAPAVER RHŒAS. *Linn.*

PLATE LVIII.*

Leaves pinnatifid or bipinnatifid, none of them amplexicaul. Outer pair of petals considerably broader than long, inner pair with the length and breadth about equal. Filaments not dilated towards the tip, as long as the pistil. Capsule smooth, very little longer than broad, cylindrical, with a hemispherical base, distinctly stipitate. Stigmatic disk slightly conical, ultimately nearly flat, with short rhomboidal lobes overlapping each other. Stigmatic rays 8 to 12, slender, not extending quite to the apices of the lobes.

Var. *α*, *vulgaris*.

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XV. Fig. 4479.

Stems and peduncles hispid, with spreading hairs.

Var. *β*, *strigosum*. Bönningh.

P. intermedium, "Becker," *Reich.* Ic. Fl. Germ et Helv. Vol. III. *Pap.* Tab. XVI. Fig. 4478.

Stem hispid, with spreading hairs. Peduncles strigose, with adpressed hairs.

Cornfields, cultivated ground, and road-sides. A common weed throughout the whole of England and the South of Scotland, where Aberdeenshire is probably its northern limit; but it is certainly of rare occurrence beyond the Tay.

England, Scotland, Ireland. Annual. Summer and Autumn.

Stem erect, 1 to 3 feet high, branched. Root leaves narrowly oblanceolate; stem leaves lanceolate or oblong, all sessile, deeply pinnatifid, with ascending lobes, and again toothed, lobes and segments terminating in a bristle. Peduncles long, terminal, covered with spreading (or in var. β adpressed) stiff hairs. Sepals with hairs similar to those of the peduncles. Flowers 3 to 4 inches across. Petals bright scarlet, often having a dark purple spot at the base, the outer pair nearly twice as broad as long. Anthers nearly black. Capsule quite smooth, from ½ to ⅝ inch long. Whole plant slightly glaucous, hairy. Hairs on the leaves shorter and less stiff than those on the stem.

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* The Plate is E. B. 645, with capsule and disk added by Mr. J. E. Sowerby.

Common Red Poppy, Corn Poppy, Corn Rose, Red Weed.
In Scotland: *Head Wark, Red Mailkes.*

French, *Pavot, Coquelicot.* German, *Klatschmohn and Klapperrose.*

The specific name is said to be derived from ῥοῦα (*rhoua*), pomegranate, which the capsule resembles; or from ῥέω (*rheo*), I fall or flow, in allusion to its perishable flowers; or from the fact that when bruised or pressed a red juice exudes from the petals. This species of Poppy is considered narcotic, though its properties must be slight. From the petals a syrup is made, which is extensively used for colouring medicines. Oil of Poppies has been drawn from the seeds. Gerarde records that in his day it was considered pleasant, and "delightful to be eaten." From the bright-coloured petals of this plant an ingenious little insect, the Drapery Bee (Megachile papaveris), chooses the hangings of her apartment. She dexterously cuts out the petals of the half-expanded flowers, strengthens the folds, and fits them for her purpose, overhanging the walls of her cell with this splendid tapestry, in which, when complete, she deposits her honey. In classic lore the Corn Poppy has long been held sacred to Ceres; as it is, however, by no means a welcome guest in the fields dedicated to her service, we may regard it rather as a sacrifice required by her from her worshippers, than as an offering to be encouraged, excepting in the sense that the eradication of weeds, of whatever kind, found intruding in the crops, and detracting from their value, must be a labour worthy of all true disciples of the agricultural goddess.

SPECIES III.—PAPAVER DUBIUM. *Linn.*

PLATES LIX. LX.

Leaves pinnatifid, none of them amplexicaul. Outer pair of petals a little broader than long, inner pair with the length and breadth about equal. Filaments not dilated towards the tip, shorter than the pistil. Capsule smooth, at least twice as long as broad, cylindrical-clavate, attenuate towards the base, and scarcely stipitate. Stigmatic disk convex-conical, slightly crenately lobed, the lobes not overlapping each other; stigmatic rays 4 to 12, slender, not extending quite to the apices of the lobes.

SUB-SPECIES I.—**Papaver Lamottei.** *Bor.*

PLATE LIX.*

P. lævigatum, "M. B.," *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XVI. Fig. 4478 B?

P. dubium, *Lamotte*, in "Mém. Académie de Clermont, 1851." *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 30. *Bab.* Fl. of Cambridge, Appendix, p. 301; and Man. Brit. Bot. ed. v. p. 15.

Leaves pinnatifid, with short, distant, abruptly acuminated lobes; lobes entire, or again pinnatifid. Capsule elongate-clavate, narrowing downwards from close to the summit to the base. Stigmatic disk with the lobes not folded over the sides of the capsule. Milk-sap white.

Cornfields, cultivated ground, and roadsides. A common weed throughout Britain, more frequent in Scotland than P. Rhœas, and reaching even to the Orkney and Shetland Islands.

England, Scotland, Ireland. Annual. Summer.

Very similar to P. Rhœas in size and general aspect, but the lobes of the leaves are usually shorter and more abruptly pointed. The peduncles have the hairs always adpressed. The flowers are smaller, from 2½ to 3 inches in diameter, the petals not so broad, even the outer pair having the breadth not much greater than the length, and never more than once and a half broader than long; the scarlet colour also is much paler than that of P. Rhœas. Pistils longer than the stamens. The capsule is often 1 inch long, three or four times as long as broad, with the lobes of the disk rounded, much shallower than in P. Rhœas, and not overlapping at the edges. Stigmatic rays not quite reaching the termination of the lobes. The base of the capsule is ob-conical, not suddenly contracted above the torus as in P. Rhœas, so that it cannot be termed stipitate.

The figure of P. lævigatum, quoted above from Reichenbach, appears to be a smooth variety of P. Lamottei, although the flower is coloured lake-red, which is never the case in the present plant; but the colouring of the plates in Reichenbach's Papaveraceæ is often extremely incorrect; P. hybridum, for example, being represented with scarlet petals instead of crimson, and the anthers of P. Rhœas and dubium being coloured yellow, while they are always purple, dark brown, or black.

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* The Plate is "P. dubium," E. B. 644, with capsule added by Mr. J. E. Sowerby.

SUB-SPECIES II.—Papaver Lecoqii. *Lamotte.*

PLATE LX.*

P. dubium, *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XV. Fig. 4477?

P. Lecoqii, *Lamotte,* in "Mém. Académie de Clermont, 1851." *Boreau,* Fl. du Centre de la Fr. ed. iii. Vol. II. p. 30? *Bab.* Fl. of Cambridge, Appendix, p. 300; and Man. Brit. Bot. ed. v. p. 15?

Leaves deeply pinnatifid, with rather long, distant, acuminated lobes; lobes entire, or again pinnatifid. Capsule oblong-clavate, narrowing downwards from about a third below the summit to the base. Stigmatic disk with the lobes folded down over the sides of the capsule. "Sap turning dark yellow (ochraceous) in the air." (Bab.)

Apparently much more local than P. Lamottei, and preferring a calcareous soil. Abundant about Cambridge and Saffron Walden, Essex; reported from the Isle of Wight by Mr. A. G. More. The Rev. W. W. Newbould has seen a plant from Wiltshire, collected by Mr. Woodward, which he refers to the present form, and also examples from Hertfordshire. I possess a specimen collected by myself from St. Margaret's Bay, Kent; and it is highly probable that it will be detected in other localities when it becomes better known.†

England. Annual. Summer.

This plant closely resembles P. Lamottei, but has the leaves more deeply pinnatifid, or rather the lobes are longer, and the undivided portion on each side of the primary midrib is narrower. The lobes, which are entire or again pinnatifid, are less abruptly acuminate than in that plant. The flowers, according to Professor Babington, are of a deeper scarlet, and the milk-sap becomes yellow when exposed to the air. The petals are deltoid, sub-orbicular, narrower and more attenuated at the base than in P. Lamottei, and the capsule is considerably shorter in proportion to its breadth, the attenuation commences at a greater distance from the top, and the base is not truly conical, but very narrowly ellipsoidal, and there is a greater contraction above the torus, so that we have a nearer approach to the stipitate capsule which exists in P. Rhœas. The stigmatic disk is curiously bent over at the edge instead of projecting outwards all round, and the stigmatic rays reach almost to the end of the lobes (which are slightly deeper than in P. Lamottei), but do not extend quite to the end in any of the specimens I have seen.

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* The drawing is from a Cambridgeshire specimen, by Mr. J. E. Sowerby.

† These localities give no just idea of the distribution of this plant. It is when the Botanist has to treat of such that he comes to appreciate the great service Mr. Hewett C. Watson has rendered to British Botany by the production of his "Cybele Britannica," in which he has given all the known details of the distribution of British plants, and so pointed out the actual range of each species. Mr. Watson has not only collected records, but what is equally necessary, sifted them so as to distinguish those which may be relied on from those which are doubtful or erroneous. Almost all the information given on this subject in the present work has been taken from Mr. Watson's "Cybele."

I have followed Professor Babington in the nomenclature of this plant. He founds his opinion "on the statement of M. Crepin that P. Lecoqii is the only species in which the sap turns yellow." On the other hand, P. Lecoqii is described as having the stigmatic rays reaching *quite* to the edge of the disk. The Cambridge plant agrees well with specimens of P. modestum published in Billot's "Flora Galliæ et Germaniæ Exsiccata," No. 2610; but Jordan says nothing about the colour of the sap, nor whether the ends of the lobes of the disk are bent down or projecting; at the same time he designates it as widely different from P. Lecoqii. The convexity of the disk, the greyish flesh colour of the seeds, and the lobes of the leaf segments being nearly entire, upon which M. Jordan appears to lay stress in his specific description of P. modestum, are characters upon which no dependence can be placed; they all occasionally occur in P. Lamottei, in which the capsule at last becomes flat at the top, and the seeds are usually simply grey. It will require a comparison of authentic specimens before this point can be fully cleared up.

Reichenbach's figure of P. dubium resembles P. Lecoqii in the leaves and form of the capsule, but the stigmatic disk is not bent down at the edges; it is, however, evidently carelessly drawn, as it bears no resemblance to the disk of that or any other species of the genus.

Long Smooth-headed Poppy.

Its Latin specific name "dubium," signifies the doubtful nature of its distinctions to superficial observers.

SPECIES IV.—PAPAVER ARGEMONE. *Linn.*

PLATE LXI.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XIV. Fig. 4475.

Leaves very deeply bi- or tri-pinnatifid, none of them amplexicaul. All the petals longer than broad. Filaments much dilated towards the top, nearly as long as the pistil. Capsule elongate, cylindrical-clavate, attenuated towards the base, not stipitate, with scattered, incurved, ascending bristly spines. Stigmatic disk convex, not lobed. Stigmatic rays 4 to 6, very thick and prominent, extending to or beyond the edge of the disk.

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* The Plate is E. B. 643, with dissections added by Mr. J. E. Sowerby.

Cornfields, roadsides, and waste places, &c. A rather common weed, preferring a sandy or gravelly soil. As generally distributed as P. dubium, but less abundant.

England, Scotland, Ireland. Annual. Summer.

Stem 6 to 18 inches high, little branched except at the base, from which several stems usually arise, which are decumbent below, and then erect. Radical leaves stalked, deeply pinnatifid, with distant spreading lobes, which are again pinnatifid, the ultimate segments suddenly acuminate, and terminating in a bristle as in P. Rhœas and P. dubium. Stem leaves sessile, sub-ternate, bi- or tri-pinnatifid, with longer and more slender segments than in the radical leaves. Peduncles with adpressed hairs. Calyx with scattered hairs similar to those on the peduncle. Flowers 2 to 2½ inches across. Petals obovate-wedge-shaped, not contiguous when fully expanded, light scarlet, with the base dark purple, nearly black. Filaments dilated, oblanceolate, abruptly acuminate, purplish black, terminating in a white point on which the blue anther lobes are situated. Capsule ¾ to 1 inch long, four or five times as long as broad, with very prominent longitudinal lines, indicating the situation of the placentæ, and a greater or less number of curved, ascending, bristly hairs, most numerous towards the top. Stigmatic disk with very thick prominent rays, curved downwards at the ends, and often projecting beyond the disk itself. Whole plant green, not glaucous, more or less hairy, especially at the base of the stem, and on the petioles and midribs of the radical leaves, where the hairs are usually spreading, though on the rest of the plant they are adpressed.

This is the smallest and most elegant of the British Poppies. Withering describes as a species, under the name of P. maritimum, a starved state of this plant bearing only a single flower and not above 4 inches high.

Long Prickly-headed Poppy.

The specific name is probably derived from *argemon*, cataract, a disease of the lens of the eye, for which an infusion of this plant was considered a cure, and possibly its emollient power did allay inflammation.

SPECIES V.—PAPAVER HYBRIDUM. *Linn.*

PLATE LXII.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XIV. Fig. 4476.

Leaves very deeply bi- or tri-pinnatifid, none of them amplexicaul. Petals nearly as broad as long. Filaments much dilated towards the tip, rather shorter than the pistil. Capsule shortly ovoid, attenuated towards the base and apex, not stipitate, with numerous incurved, spreading-ascending, bristly spines. Stigmatic disk convex, scarcely lobed. Stigmatic rays 4 to 8, very thick and prominent, extending to or beyond the edge of the disk.

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* The Plate is E. B. 43, with fruit and dissections added by Mr. J. E. Sowerby.

Cornfields, waste places, local, preferring chalky or sandy soil. Occurs in a good many of the English counties, but does not extend to Scotland.

England, Ireland. Annual. Summer.

Stem 1 to 2 feet high, erect, solitary, or several from the same root, generally branched above. Leaves very similar to those of P. Argemone, except that the radical leaves are sometimes tri-pinnatifid, and the outline of all is considerably broader. The stem leaves are more decidedly ternate in the arrangement of the primary divisions. Peduncles strigose, with adpressed hairs. Sepals very bristly. Flowers 1½ to 2 inches in diameter. Petals roundish, very fugacious, crimson, with a purplish-black spot at the base. Stamens similar to those of P. Argemone. Capsule about ½ inch long, regularly oval-ovoid or sub-globose, the nerves which on the exterior mark the placentæ not at all prominent, but the whole of the space between them bulges outwards, so that the capsule becomes slightly lobed. Bristles far more numerous, rigid, and spreading than in P. Argemone. Stigmatic disk much smaller in proportion, but otherwise resembling that of the last-named species. The whole plant rather dull green, slightly hairy, with the hairs on the lower part of the stem soft and spreading. The petals fall off about noon.

Round Prickly-headed Poppy, Mongrel Poppy.

GENUS II.—MECONOPSIS. *Vig.*

Sepals 2, herbaceous, very caducous, falling off when the flower opens. Petals 4, crumpled in æstivation, caducous. Stamens indefinite. Capsule elliptical-oblong, 1-celled, with placentæ projecting slightly into the interior and forming imperfect partitions, contracted above into a short style, at the top of which there are 4 to 6 radiating, free, deflexed stigmatic rays, and opening at the top by as many short triangular valves as there are stigmatic rays. Seeds numerous, punctured, with or without a strophiole.

Perennial, or rarely annual herbs, with yellowish milk-sap. Habit very similar to that of the genus Papaver.

The generic name of this plant comes from μηκων (*mekon*), a Poppy, and οψις (*opsis*), a likeness or resemblance.

SPECIES I.—MECONOPSIS CAMBRICA. *Vig.*

PLATE LXIII.*

Papaver Cambricum, *Linn.* *Sm.* Eng. Fl. Vol. III. p. 12; and Eng. Bot. ed. i. No. 66.

Stem with several flowers. Leaves stalked, pinnately divided, almost pinnate, with ovate-acute lobed or pinnatifid segments.

In moist, rocky, and shady places. Local, and apparently confined to the west side of England. Wild in the counties of Cornwall, Glamorgan, Brecknock, Montgomery, Merioneth, Carnarvon; more doubtfully so in Denbighshire, Yorkshire, Westmoreland, Cumberland, and Dumfries. Introduced in Edinburgh, Kinross, Aberdeen, and Moray.

England, [Scotland,] Ireland. Perennial. Summer.

Rootstock brown, scaly, with short branches. Stem 1 to 2 feet high, bearing a few leaves, which are also produced, in greater abundance, from the base. Leaves stalked, very deeply pinnately partite, with 2 to 4 pairs of segments and a terminal one joined together at the base by only a very narrow wing on each side of the midrib; leaflets much narrowed at the base, with a few lobes or large blunt teeth on each side, terminal leaflet often 3-cleft. Peduncles terminating the stem and branches, and sometimes produced from the axils of the upper leaves, 6 to 8 inches long, bearing a bright yellow flower 2½ to 3 inches in diameter. Buds nodding. Sepals with scattered flexuous hairs. Petals roundish, concave. Style about $\frac{1}{10}$ inch long, terminated by a small button formed by 4 to 6 radiating stigmas. Capsule 1 to 1¼ inch long, very dark brown when ripe, with 4 to 6 prominent ribs; valves 4 to 6, opening in the spaces between the ribs and becoming reflexed, scarcely one-fourth the length of the capsule. Plant nearly glabrous, except at the base of the stems where there are scattered woolly hairs. Foliage tender pale green, slightly glaucous. Sap lemon-coloured.

Welsh Poppy, Yellow Poppy.

French, *Méconopside de Galles.*

The specific name Cambrica indicates its native country Wales, where it is plentifully found. Its yellow flowers are handsome, and worth introducing into shrubberies, but in the flower garden it would be rivalled too successfully by the Eschscholtzia, which is neater and equally showy. The rapidity with which the Poppies open their sepals and allow the petals to expand has been remarked by Dr. Withering, and is worthy of observation by all lovers of nature. The entomologist considers the birth of the butterfly, and its immediate perfection, as a curious and pleasing phenomenon, but it is equalled in the vegetable world by the sudden springing into life of the brilliant Poppy flower. She lies concealed and carefully folded in her sea-green mantle until her full maturity arrives. Then the warm rays of the sun piercing her covering, she bursts forth, casts her rejected mantle from her, her silken drapery loses its wrinkled folds, and she appears at once a splendid and richly-dressed inhabitant of the flower garden, while we are wondering how so small a cell should have confined so much magnificence. Her beauty is, however, as evanescent as its appearance was sudden. Like the butterfly's wing, such transparent tissue and vivid colours were not made to brave the winds and storms of life,—

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* The Plate is E. B. 66, unaltered.

> "For pleasures are like poppies spread,
> You seize the flower, its bloom is shed;
> Or like the snow, falls on the river—
> A moment white, then melts for ever;
> Or like the borealis race,
> That flit ere you can point their place;
> Or like the rainbow's lovely form,
> Evanishing amid the storm."

GENUS III.—ROEMERIA. *D. C.*

Sepals 2, herbaceous, very caducous, falling off when the flower opens. Petals 4, crumpled in æstivation, caducous. Stamens indefinite. Capsule elongate-linear, resembling a siliqua, 1-celled, with the placentæ nervelike, projecting into the interior of the fruit, terminated by the sessile stigma of 2 to 4 (usually 3) deflexed, free rays or lobes, and opening from the summit to the base by as many valves as there are stigmatic rays. Seeds numerous, punctured, without a strophiole.

Annual herbs with dissected leaves and much of the habit of the genus Papaver.

The genus is named after J. I. Römer, late Professor of Botany at Landshut.

SPECIES I.—ROEMERIA HYBRIDA.

PLATE LXIV.*

Chelidonium hybridum, *Linn.* Sp. Pl. p. 724. *Sm.* Eng. Bot. ed. i. No. 201.
Glaucium hybridum, *Lois.* Fl. Gall. Vol. I. p. 376.
Glaucium violaceum, *Juss.* Genera, 236. *Sm.* Eng. Fl. Vol. III. p. 7.

Leaves thrice pinnatifid, the ultimate segments strap-shaped or linear. Capsule 3-valved, with a few bristly spines towards the top.

In cornfields and chalk-pits. A very rare weed, occurring between Swaffham Prior and Burwell, Cambridgeshire, and also reported from Norfolk.

England. Annual. Summer.

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* The Plate is E. B. 201, with apex of capsule added by Mr. J. E. Sowerby.

Stem erect, branched. Radical leaves stalked, pinnatifid or bipinnatifid. Stem leaves sessile, thrice pinnatifid, with a tendency to be ternate, segments very narrow. Peduncles terminating the stem and branches slightly curved, 2 to 4 inches long, bearing a single flower 2 to 2½ inches in diameter. Buds nodding. Sepals with a very few woolly hairs. Petals roundish-obovate, violet-purple, with a large dark spot at the base. Capsule linear, cylindrical, 2½ to 3 inches long, with a few bristly hairs. Plant smooth, or slightly hairy, the leaves dark green, and somewhat resembling those of Papaver hybridum; the segments as in that plant terminating in short bristles and the flowers very soon losing their petals.

Violet Horn Poppy.

GENUS IV.—GLAUCIUM. *Tournef.*

Sepals 2, herbaceous, very caducous, falling off when the flower opens. Petals 4, convolute in æstivation, caducous. Stamens indefinite. Capsule elongate-linear, resembling a siliqua, 2-celled from the presence of a spongy spurious dissepiment which unites the 2 nervelike placentæ, and opening from the summit to the base by 2 valves. Style very short. Stigma sub-mitriform, with 2 deflexed lobes. Seeds punctured, without a strophiole, half immersed in the spurious dissepiment.

Annual or biennial glaucous herbs, with large showy flowers and very long pod-like capsules. Buds erect.

The name Glaucium comes from the word *glaucus*, sea-green, in allusion to the colour of its leaves.

SPECIES I.—GLAUCIUM CORNICULATUM. *Curt.*

PLATE LXV.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XII. Fig. 4471; and G. rubrum, Tab. XI. Fig. 4470.
Chelidonium corniculatum, *Linn.* Sp. Pl. p. 724.
Glaucium Phœnicium, *Crantz.* *Sm.* Eng. Fl. Vol. III. p. 7; and Eng. Bot. No. 1433.

Stem hairy. Stem leaves semi-amplexicaul, deeply pinnatifid. Pod hairy, terminated by the large deflexed stigmatic lobes.

It has been reported to occur in the county of Norfolk and in the Isle of Portland, and occasionally a specimen appears as an escape from cultivation, but it cannot claim to be even a naturalized plant.

[England.] Annual. Summer.

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* The Plate is E. B. 1433, unaltered.

Stem erect, 1 to 2 feet high, branched. Radical leaves very deeply pinnatifid, sub-lyrate; segments rather distant, nearly at right angles with the petiole, sharply toothed; stem leaves much less deeply pinnatifid, with the segments pointing towards the end of the leaf, remotely serrate. Peduncles very short, terminating the stem and branches. Buds tapering to a point. Sepals with numerous soft hairs. Flowers 1½ to 2 inches in diameter. Petals bright scarlet with a black spot at the base, the outer pair sub-rotund, the inner ones obovate. Pod 7 to 9 inches long, slightly curved, sub-cylindrical, covered with weak ascending hairs. Stigma very large, three or four times the diameter of the top of the pod, with the lobes deflexed. Plant more or less hairy, particularly on the stems, where the hairs are spreading, pale green, glaucous.

Red Horn Poppy.

French, *Glaucière Cornue.*

SPECIES II.—GLAUCIUM LUTEUM. *Scop*

PLATE LXVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. XI. Fig. 4468
Chelidonium glaucium, *Linn.* Sp. Pl. p. 724. *Sm.* Eng. Bot. No. 8.
Glaucium flavum, *Crantz.*

Stem leaves amplexicaul, pinnatifid. Pod without hairs, terminated by the small spreading stigmatic lobes.

On shingly and sandy seashores. Common in England, but rare in Scotland, where the shores of the Forth and Clyde appear to be its northern limit.

England, Scotland, Ireland. Biennial or Perennial.
Summer, Autumn.

Root and rootstock almost woody, the latter clothed with the blackened remains of decayed leafstalks. Stem erect or ascending, much branched, 1 to 3 feet high. Radical leaves numerous, deeply pinnatifid, sub-lyrate with the segments bent so as to be in a different plane from the petiole, the lower edge of each lobe directed upwards. Stem leaves pinnatifid, with approximate segments, which in the upper leaves are often reduced to very large triangular teeth or lobes. Peduncles very short, glabrous. Buds tapering, slightly twisted, with a very few hairs. Flowers 2½ to 3½ inches in diameter, petals deep rich yellow, concolorous or occasionally with a slightly darker mark at the base, the outer pair transversely oval, the inner ones inversely deltoid, sub-rotund. Pod curved, often nearly a foot long, with minute tubercles, but no hairs. Stigma scarcely twice the diameter of the apex of the pod, with the lobes spreading. Valves of the pod splitting from the summit downwards, and leaving the spongy dissepiment and stigma attached to the placentæ. Whole plant very glaucous, the leaves rather thick, and having minute hairs on their surface. The radical leaves of the first year often white from the number of these hairs, Stem smooth. Milk sap pale orange-colour, with a heavy disagreeable odour.

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* The Plate is E. B. 8.

Yellow Horn Poppy, *Squats* (of the Portland Islanders).

French, *Glaucière Jaune*. German, *Gehornte Schöllkraut*, *Gelbe Hornmohn*.

Luteum signifies pale yellow. This is perhaps the most striking and remarkable of our sea-shore plants, and cannot fail to arrest attention where so little vegetation flourishes. With our notice of this pretty plant it may not be uninteresting to recall the history of Glaucus, whose name it bears. He was, according to a mythological tradition, the son of Neptune and a sea-nymph, but lived upon the shore. His parentage had some influence on his habits, and he was fond of fishing. One day, having been successful in his sport, he laid his scaly captives on a neighbouring marsh, when to his great surprise they began to nibble the green grass, and then—

"Sudden darting o'er the verdant plain,
They spread their fins as in their native main.
He paused with wonder struck, while all his prey
Left their new master and regained the sea."

Amazed at what he saw, Glaucus resolved to try the power of the herbage in his own person: no sooner had he bitten it than his hereditary aquatic propensities seized him, and into the ocean he leaped:—

"Farewell for ever, farewell, land, I said,
And plunged amid the waves my sinking head;
The gentle powers who low that empire keep
Received me as a brother of the deep."

For his faith and courage Glaucus was admitted among the sea-gods. In their domain he still shows his royal descent by wearing a golden robe; and yet from old affection high above it he bears his favourite long and curved fishing-rod, with its point bent, as if a captive fish ever strained it. Glaucus never goes far out to sea, but rather frequents the shores and the cliffs; for Scylla, whom he loved, was turned into a rock with howling waves around her, and his faithfulness retains him still close to her side. The Horned Poppy has no recognised active properties. Nevertheless the chemists have discovered two alkaloids in its structure. Glaucine is found in the leaves and stem, and forms, with acids, salts which have a bitter and acrid taste. Glaucopicrine, the other, is found in the roots, and also forms with acids bitter and nauseous salts.

GENUS V.—CHELIDONIUM. *Linn.*

Sepals 2, sub-petaloid, caducous. Petals 4, convolute in æstivation, caducous. Stamens indefinite. Capsule linear, resembling a siliqua, 1-celled, without a dissepiment, opening by 2 valves, which detach themselves from the nervelike placentæ beginning at the base. Style very short. Stigmas 2, oblique, with 2 spreading lobes. Seeds with the raphe furnished with a fleshy crest.

A brittle herbaceous perennial, with orange-coloured juice. Leaves pinnipartite. Flowers small, yellow, in simple umbels.

The generic name comes from χελιδων (*kelidon*), a swallow, because, says an old writer, "it beginneth to spring and flower at the coming of the swallows, and withers at their return."

SPECIES I.—CHELIDONIUM MAJUS. *Linn.*

PLATE LXVII.*

Leaves pinnatipartite, with stalked or sessile segments.

Var. *α*, *vulgaris*.

PLATE LXVII. (A.)

C. majus, *Mill.* *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. X. Fig. 4466. *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. I. p. 32.

Leaflets slightly lobed or doubly crenate. Petals entire.

? Var. *β*, *laciniatum*. †

PLATE LXVII. (B.)

C. laciniatum, *Mill.* *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. X. Fig. 4467. *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. I. p. 32.

Segments pinnatifid, with narrow cut lobes. Petals generally cut into narrow segments at the apex.

Not uncommon in hedges and on roadsides; but probably only naturalized. Var. β very rare, said by Dillenius to have been found at Wimbledon, Surrey, by Mr. Martyn, and still occasionally occurring as an escape from cultivation.

England, Scotland, Ireland. Perennial. Early Summer to Autumn.

Root thick and fleshy, terminating in a rhizome clothed with

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* This Plate is re-drawn, with corrections, by Mr. J. E. Sowerby, from E. B. 1581. Var. β added in a corner.

† Possibly a distinct sub-species.

the bases of decayed leaves. Stems erect, 1½ to 3 feet high, swelling at the base of each internode. Leaves deeply pinnipartite, appearing almost pinnate, with 5 to 7 oval or oblong leaflets, 1 to 2 inches long; in var. β much narrower than in the common form, and irregularly cut, while in var. α they are generally doubly crenate; the terminal leaflet commonly 3-cleft; the lateral ones usually with a stalklike portion at the base, from the lower side of which a lobe is developed, looking like a stipule to the segment, the basal leaflets are commonly without this appendage. Peduncles terminating the stem and branches. Flowers ¾ to 1 inch in diameter, on slender pedicels, 4 to 8 together, in umbels surrounded by an involucre of small bracts. Sepals greenish yellow, more or less hairy. Petals broadly obovate, bright yellow, entire in var. α; narrower and cut into a few narrow segments in var. β. Pods about 1½ inch long, beaded, readily splitting if touched when ripe. Seeds small, black, with a white crest. Whole plant pale yellowish green, slightly glaucous and hairy. Stem and leaves very brittle. Milk-sap bright orange, very abundant.

Common Celandine, Swallow Wort.

French, *Chélidoine Éclaire.* German, *Das Gemeine Schöllkraut, Goldwurz, Gilbkraut, Schwalbenkraut.*

Pliny writes that "with this herb the swallows restore sight to their young ones when they cannot see." Our old friend Gerarde says "this is vain and false,"—with which decision we are inclined to agree. Still he cannot entirely give up some fancied benefit to be received from this plant by man, if not by birds, for he writes: "The juice of the herbe is good to sharpen the sight, for it cleanseth and consumeth away slimie things that cleave about the ball of the eye, and hinder the sight, and especially being boiled with hony in a brasen vessell, as Dioscorides teacheth." The acrimonious yellow milk of this plant will, like many other vegetable exudations, destroy the vitality of warts, and it was at one time frequently used in this way. The old alchemic doctors, reasoning that "like cures like," held that it was good to "superstifle the jaundice," because of its intense yellow colour. This plant contains two alkaloids, chelidonine and chelerytherine, which form salts with acids. The latter is narcotic and poisonous. The Chelidonium majus is undoubtedly the true Celandine, although poets have given that name to the Ranunculus Ficaria, or Figwort, which lacks anything like a fanciful or pretty designation itself the which to weave into a song.

SUB-ORDER II.—FUMARIEÆ.

Outer petals quite unlike the inner ones. Stamens definite, 6 in number, united by the filaments into 2 bundles consisting each of 3 stamens, of which the lateral ones have a 1-celled, and the intermediate one a 2-celled anther.

The above definition excludes the Hypecoum, which, notwithstanding the definite stamens, is much nearer to Papavereæ than to any of the genera of Fumarieæ.

GENUS VI.—CORYDALIS. *D. C.*

Sepals 2, generally scale-like or petaloid, deciduous. Corolla narrow, appearing 2-lipped. Petals 4, connivent, the superior one with a spur or protuberance at the base, the lower one without a spur; inner petals narrow, cohering at the tips. Stamens 6, in two bundles, opposite the exterior petals. Filament of the upper bundle of stamens having often a basal appendage directed backwards and included in the spur of the superior petal. Capsule resembling a siliqua, 2-valved, with 2 permanent nervelike placentæ. Seeds more than one, lenticular; raphe usually furnished with a more or less conspicuous crest.

Brittle-stemmed succulent herbs, with racemes of horizontal or drooping flowers.

The generic name is derived from κορυδαλος (*korydalos*), a lark,—in allusion to the shape of the flowers, the spur of which resembles the spur of a lark.

SUB-GENUS I.—BULBOCAPNOS. *Bernh.*

Rootstock tuberous. Stem with 1 or 2 leaves. Flowers in a terminal raceme. Style wholly persistent. Cotyledons united into one.

SPECIES I.—CORYDALIS SOLIDA. *Hook.*

PLATE LXVIII.*

C. digitata, *Pers.* *Reich.* Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. VII. Fig. 4462.
Fumaria bulbosa, var γ, *Linn.* Sp. Pl. p. 983.
Fumaria solida, *Sm.* Eng. Bot. ed. i. No. 1471; and Eng. Fl. Vol. III. p. 253.

Rootstock a solid rounded tuber. Stem with 1 scale (or 2) below the leaves. Style bent.

Not a true native, but more or less perfectly naturalized in a few places. At Kendal (the site of an old garden); Wickham, Hampshire; near Birmingham; Duckett Ings, Yorkshire; and near Uxbridge, Middlesex.

[England]. Perennial. Spring.

Rootstock a solid cormlike tuber, emitting root fibres from the base. Stems 1 or 2, unbranched, 6 to 18 inches high, with a scale formed by an abortive petiole a little below the first leaf. Leaves 2 to 4, biternate, with the leaflets obovate, 3-lobed or cut. Raceme at first short, with 6 to 12 sub-secund flowers. Bracts digitately lobed, about as long as the pedicels. Sepals entire, very small or obsolete. Flowers purplish, variegated, $\frac{3}{4}$ to 1 inch long, including the spur of the upper petal, which is about half the length of the flower and slightly curved. Upper petal slightly notched, the lower one more deeply so, gibbous at the base, but not spurred like the upper one; lateral petals shorter than the exterior ones, widened at the apex, where they adhere. Raceme lengthened in fruit. Pods about as long as the pedicels, elliptical, linear, tipped by the persistent style, opening from the base towards the tip. Seeds several, very glossy, with a crestlike appendage. Plant glabrous and glaucous.

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* The Plate is E. B. 1471, with additional dissections by Mr. J. E. Sowerby.

Solid-rooted Corydalis, Tuberous-rooted Fumitory.

French, *Corydalis Tubéreuse.* German, *Lerchensporn.*

SUB-GENUS II.—CAPNOIDES. *D. C.*

Rootstock none, or not tuberous. Racemes opposite the leaves. Extremity of the style caducous. Cotyledons 2, opposite.

SPECIES II.—**CORYDALIS LUTEA.** *D. C.*

PLATE LXIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. VI. Fig. 4459.
Fumaria lutea, *Linn.* *Sm.* Eng. Bot. ed. i. No. 588; and Eng. Fl. Vol. III. p. 253.

Rootstock branched, producing numerous leafy stems, leaves tri-ternate, without tendrils. Peduncles longer than the leaves opposite to which they spring. Pedicels shorter than the flowers, but equalling or exceeding the pods. Seeds shining, appearing granulated under a lens, with a lobed membranous crest.

On old walls. Naturalized in many places both in England and Scotland.

[England,] [Scotland]. Perennial. Summer.

Rootstock branched, giving rise to numerous stems. Stems diffuse, 6 to 12 inches high. Leaves stalked, the lowest on very long stalks, tri-pinnate, with oval, nearly entire, or broadly obovate, 3-lobed leaflets. Racemes appearing to be opposite the leaves, but really (as in most of such cases) terminating the branches; the apparent prolongation of the main stem is merely a branch developed from the axil of the uppermost leaf. Bracts lanceolate, erose, much shorter than the pedicels. Flowers $\frac{1}{2}$ to $\frac{3}{4}$ inch long, bright yellow, darker at the tips, sub-secund, 6 to 12 or even more in each raceme, which is compact while in flower, but elongated in fruit. Sepals ovate, cuspidate, narrower and much shorter than the corolla.

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* The Plate is E. B. 588.

Upper petal larger than the others, folded longitudinally and keeled, enlarged and somewhat spreading at the apex, with a short, thick incurved spur at the base, not one third the length of the rest of the petal; lower petal keeled, spatulate; lateral petals oblanceolate. Pods oblong, compressed, beaded, mucronate by the persistence of the base of the style. Seeds 3 to 6, black and shining, thickly covered with small round tubercles, which however are scarcely discernible by the naked eye; crest of the raphe large, white, lacerate, dentate, spreading. Plant yellowish green, slightly glaucous. Stems brittle and somewhat succulent.

Yellow Fumitory, or Corydalis.

French, *Corydalis Jaune.*

The specific name is from the Latin word *luteus*, yellow.

SPECIES III.—CORYDALIS CLAVICULATA. *D. C.*

PLATE LXX.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. V. Fig. 4457.
Fumaria claviculata, *Linn. Sm.* Eng. Bot. ed. i. No. 103; and Eng. Fl. Vol. III. p. 254.

No rootstock. Stems leafy. Leaves pinnate, with the leaflets ternate, all lateral; the secondary lateral leaflets usually, and the terminal one occasionally bijugate, the common petiole terminating in a branched tendril. Peduncles shorter than the leaves opposite to which they spring. Pedicels shorter than the flowers and pods. Seeds shining, appearing granulated under a lens, with a very small membranous crest.

In woods, bushy places, sandy ground, and thatched roofs. Sparingly but widely distributed throughout Britain, but becoming scarcer towards the west and north of Scotland.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stems weak, diffusely branched, trailing or climbing. Leaves stalked, with 3 or 4 pairs of distant, compound, ternate leaflets; leaflets towards the base of the leaf often appearing quinate, from the shortness of the stalks of the elliptical entire secondary leaflets; those of the upper portion of the leaf simply ternate, and gradually diminishing in width till they become mere branches of the tendril. Racemes disposed as in the last species, but on very much shorter peduncles. Bracts oblong, cuspidate, longer than the pedicels. Flowers resembling those of C. lutea, but only about ¼ inch long, pale straw colour. Pods small, about ¼ inch long, exceeding the pedicels, elliptical, oblong, compressed, beaded, mucronate by the persistence of the short base of the style. (The style is usually described as wholly deciduous, but I have not found this to be the case, for, as in C. lutea, its base remains while its apex disappears after flowering.) Seeds shining, black, smoother than in C. lutea, and with a much smaller crest. Plant glabrous and glaucous. Stems brittle and somewhat succulent.

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* The Plate is E. B. 103.

White Climbing Fumitory, or Corydalis.

French, *Corydalis à Vrilles.*

This plant owes its specific name to the tendrils with which its leafstalks terminate—*clavicula* being the Latin word for a tendril, or little stalk.

GENUS VII.—**FUMARIA.** *Linn.*

Sepals 2, petaloid or scale-like, deciduous. Corolla narrow. Petals 4, connivent, the superior one with a spur or protuberance at the base, the lower one without a spur; inner petals narrow, cohering at the tips. Stamens 6, in two bundles, opposite the exterior petals; filament of the upper bundle of stamens having often a basal appendage directed backwards and included in the spur of the superior petal. Fruit sub-globular, 1-seeded, indehiscent. Style caducous. Seed without a crest.

Annuals, with somewhat succulent, angular, diffusely branched stems, frequently supporting themselves by the aid of the petioles, which twist round adjacent bodies. Leaves alternate, twice or thrice pinnate, with a slight tendency to become ternate in the arrangement of the primary divisions. Flowers purple or whitish, with dark purple tips, racemose. Racemes opposite the leaves, or terminal.

The generic name Fumaria comes from *fumus*, smoke,—either because the plants are said to have a smoky smell, or on account of the light, almost smoky appearance of the herbage of some of the species, which seems to rise out of the ground almost as a smoke.

SPECIES I.—**FUMARIA CAPREOLATA.** *Linn.*

Plates LXXI. LXXII. LXXIII. and LXXIV.

Racemes rather lax, not much elongated in fruit. Sepals broadly ovate, acute, toothed, one third to two thirds the length of the tube of the corolla, and equal to it in breadth. Lower petal gradually enlarged towards the tip. Pedicels of the fruit reflexed or patent, longer than the bracts. Fruit smooth or slightly rugose when dry, sub-globular, slightly compressed, rounded or sub-truncate, but not retuse at the apex, where there is a very minute apiculus, on each side of which is a small pit. Leaves twice or thrice pinnate, the ultimate leaflets deeply cut or lobed; segments flat, oblong, elliptical, or oval.

SUB-SPECIES I.—**Fumaria pallidiflora.** *Jord.*

PLATE LXXI.*

Bab. in Journal of Proceedings of the Linnæan Society, Vol. IV. No. 16, p. 162.
Jord. in *F. Schultz*, Arch. p. 305. *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 34.
F. pallidiflora *a*, Jordani, *Bab.* Man. Brit. Bot. ed. v. p. 17.
F. speciosa, *Lloyd*, Fl. de l'Ouest de la Fr. p. 24 ? (non *Jordan*).

Sepals ovate, denticulate, half or two-thirds the length of the tube of the corolla, and equalling or exceeding it in breadth. Flowers cream-colour tipped with reddish purple. Fruit pedicels recurved. Fruit nearly smooth when dry, roundish, compressed, longer than broad, sub-truncate at the apex, where there are two small but rather deep pits; neck of the fruit narrower than the enlarged apex of the pedicel.

A weed in cultivated ground and in hedges. Apparently rather rare, and confined to the south-west of England. The only specimens I possess are collected by Miss Gifford near Dunster, Somerset. Professor Babington gives also "Salcombe and Ilfracombe, Devon; Watchet, Somerset; Oystermouth, near Swansea, Glamorgan; Carnarvon; Oswestry, Shropshire." Mr. A. G. More has found it in the Isle of Wight.

England. Annual. Summer and Autumn.

Stem 1 to 3 feet long, weak, fragile, diffusely branched. Leaves twice or thrice ternately-pinnate; the ultimate segments obovate or wedge-shaped, lobed; lobes oblong or elliptical. Petioles often twisting and acting as tendrils. Racemes 1 to 1½ inches long, both in flower and fruit, stalked, opposite the leaves. Flowers curved upwards at the point, about ½ inch long including the spur, which is nearly one-third the length of the upper petal, and blunt. Sepals broadly ovate, produced backwards behind the point of attachment, toothed, especially near the base, cream-colour. Upper petal cream-coloured, with a purple blotch at the tip, and occasionally a paler shade of the same colour extends backwards towards the base; lateral petals linear, slightly keeled, cream-colour with a purple apical blotch; lower petal linear, folded, gradually dilated towards the end, where it is greenish. Pedicels usually strongly recurved after flowering, longer than the coloured bracts, and dilated at the apex. Fruit about $\frac{1}{10}$ inch long, and $\frac{1}{12}$ inch broad, with a somewhat rectangular profile; at the base of the fruit there is a fleshy disk or collar, which is usually described as the "base of the fruit," but which I prefer to designate "the neck," as to an unpractised observer this term will, I believe, more readily direct his attention to the part of the fruit under consideration, from which the principal characters employed to separate the sub-species of F. capreolata are taken. In the present plant, this neck passes gradually into the fruit, which is broader than the neck; the latter is also narrower than the enlarged apex of the pedicel. Plant pale green, glaucous.

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* The Plate is from a drawing made by Mr. J. E. Sowerby, from a Somersetshire specimen.

SUB-SPECIES II.—**Fumaria Boræi.** *Jord.*

PLATE LXXII.*

Bab. in Journal of Proceedings of the Linnæan Society, Vol. IV. No. 16, p. 163. *Baker,* Rep. of Thirsk Nat. Hist. Soc. 1861, p. 5.

Jord. "Cat. Grenob. 1849, p. 15." Pugillus Plant. Nov. p. 4. *Boreau,* Fl. du Centre de la Fr. ed. iii. vol. ii. p. 34. *Lloyd,* Fl. de l'Ouest de la Fr. p. 24. *Breb.* Fl. de la Normandie, p. 17.

F. pallidiflora β, Boræi, *Bab.* Man. Brit. Bot. ed. v. p. 17.

F. capreolata β, Leightonii, *Bab.* Man. Brit. Bot. ed. iv. p. 17.

F. muralis, *Boreau,* Fl. du Centre de la Fr. ed. ii. No. 95 (non *Sonder*).

Sepals broadly ovate, acute, about two-thirds the length of the tube of the corolla, and exceeding it in breadth. Corolla pale purplish pink, tipped with dark purple. Fruit pedicels patent. Fruit slightly rugose when dry, roundish, compressed, rather broader than long, sub-truncate at the apex where there are two small but rather deep pits. Neck of the fruit narrower than the enlarged apex of the pedicel.

A weed in cultivated ground and in hedges. Probably common and generally distributed. I have specimens from Ilkley, Yorkshire; Haddingtonshire; Orkney; and Professor Babington gives the following localities:—"Tenby, Pembrokeshire; Shrewsbury; Windermere, Lancashire; Glenmore, near Lisburn, co. Antrim."

England, Scotland, Ireland. Annual. Summer, Autumn.

Extremely like F. pallidiflora, of which Professor Babington now makes it a variety, and it is very probable that it may be so, but this can only be determined by continued cultivation. To my eyes it appears as distinct from F. pallidiflora as F. muralis is from F. confusa. The flower is of a delicate pink tinged with purple, while that of F. pallidiflora is cream-colour. The pedicels after flowering are occasionally slightly recurved, and by the time the fruit is ripe their direction becomes patent or divaricate; while in all the specimens of F. pallidiflora which I have seen, the pedicels are recurved at the base nearly in a semicircle, and then straight at the apex, so that the axis of the fruit is parallel to the rachis of the raceme in a reversed position. The fruit is shorter in proportion than in F. pallidiflora, and taken without the neck is actually broader than long. The neck of the fruit is, however, very similar. This is the only one of the Capreolatæ of which I have seen British specimens in a growing state.

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* The figure in the plate is F. capreolata. E. B. No. 943, with dissections added by Mr. Sowerby from the plant sent by Mr. Baker from Ilkley; the fruit represented in the state in which it appears when moistened in warm water, as the neck loses its shape when dried, but recovers it to a great extent when treated in this manner.

SUB-SPECIES III.—**Fumaria confusa.** *Jord.*

PLATE LXXIII.*

Bab. in Journal of Proceedings of the Linnæan Soc. Vol. IV. No. 16, p. 165; and Man. Brit. Bot. ed. v. p. 18.

"*Jord.* Cat. Dij. 1848, XVIII." *Lloyd,* Fl. de l'Ouest de la Fr. p. 24.

F. Bastardi, *Boreau,* "in Rev. Bot. Vol. II. p. 359;" Fl. du Centre de la Fr. ed. iii. Vol. II. p. 34. *Breb.* Fl. de la Normandie, p. 18.

F. agraria, *Mitt.* in Lond. Jour. Bot. Vol. VII. p. 556. *Bab.* in Bot. Gaz. Vol. I. p. 62 (non *Lay.*).

"F. media, *Bast.* Fl. de Maine-et-Loire, p. 36" (*Bor.* non *Loisel*).

F. capreolata γ, media, *Bab.* Man. Brit. Bot. ed. iv. p. 17.

Sepals ovate, acute, about one-third the length of the tube of the corolla, and nearly equal to it in breadth. Corolla pale pink tinged with green, tipped with dark purple. Fruit pedicels ascending-patent. Fruit slightly rugose when dry, roundish, compressed, a little longer than broad, rounded at the apex where there are two rather broad shallow pits. Neck of the fruit broader than the enlarged apex of the pedicel.

A weed in cultivated ground and in hedges. Probably generally distributed.

Professor Babington gives the following localities:—"Jersey and Guernsey; Zennor and Trevenna, Cornwall; Ilfracombe, Devon; Tenby, Pembrokeshire; Aberystwith, Cardiganshire; Bangor, Carnarvonshire; Hawkhead, Lancashire; and Dublin." And I also observed in his Herbarium, specimens from Carisbrook Castle, in the Isle of Wight, and I possess one from Cheshire.

England. Annual. Summer, Autumn.

Somewhat like F. Boræi, but the flowers are smaller, with the sepals considerably smaller in proportion, very slightly produced backwards behind the point of attachment, and the spur of the upper petal is longer in proportion. The principal difference, however, is in the fruit, which is not at all truncate at the top, and its neck is nearly as wide as itself, and actually broader than the enlarged apex of the pedicel.

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* The Plate is from a drawing by Mr. J. W. Salter.

Though F. Bastardi has the priority, I retain the name of F. confusa, as the former has been applied both to this and F. Boræi, according to Mr. Jordan.

SUB-SPECIES IV.—**Fumaria muralis.** *Sonder.*

PLATE LXXIV.

Bab. in Journal of Proceedings of the Linnæan Soc. Vol. IV. No. 16, p. 166; and Man. Brit. Bot. ed. v. p. 18. *Baker,* Rep. Thirsk Nat. Hist. Soc. 1861, p. 6.

Sonder, in Koch, Syn. ed. ii. p. 1017; and Fl. Hamb. p. 385. *Jord.* Cat. Dij. 1848, 19. *Fries,* Summ. Veg. Scand. p. 146. *Lowe,* Fl. Madeira, p. 13.

F. capreolata, *Leighton,* Fl. of Shropshire, p. 344 (description).

Sepals ovate, acute, about one-third as long as the corolla, and nearly equal to it in breadth. Corolla rose-coloured, tipped with very dark purple. Fruit pedicels ascending, patent. Fruit finely rugose when dry, roundish, compressed; rounded at the apex, where there are two very inconspicuous pits. Neck of the fruit narrower than the enlarged apex of the pedicel.

A weed in cultivated ground and in hedges. Apparently rather rare.

Professor Babington states that he has seen F. muralis from Barnes, Surrey; Shrewsbury, Salop; Wrexham, Denbighshire; and Sheffield, Yorkshire; and to these localities I am unable to add any others, except Somersetshire and the Isle of Wight.

England. Annual. Summer, Autumn.

Very like F. confusa, but the flowers are rather smaller than in that or any other of the sub-species of F. capreolata, being only from ½ to ⅝ inch long, and generally darker in colour. The fruit is also rather smaller, and has the neck narrower than in F. confusa, to which it appears to me to be too closely allied; but I retain it as a sub-species until the permanence of the character taken from the neck of the fruit has been tested by cultivation.

Rampant Fumitory, Rampant Earth-Smoke.

French, *Fumeterre à Pédicelles Recourbés.*

This species was known, and is still recognised, as Fumaria capreolata, which name being derived from *caper*, a goat, well suggests its wild, climbing, vigorous habit. Its common English name also speaks of its vagrant, gipsy-like tendencies.

SPECIES II.—FUMARIA MICRANTHA. *Lag.*

PLATE LXXV.*

Bab. Man. Brit. Bot. ed. v. p. 18. *Hook. & Arn.* Brit. Fl. p. 20.
"*Lagasca,* Nov. Gen. et Sp. XXI. n. 281 (1816)." *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 1018. *Boreau,* Fl. du Centre de la Fr. ed. iii. Vol. II. p. 34. *Lloyd,* Fl. de l'Ouest de la Fr. p. 25. *Brebisson,* Fl. de la Normandie, p. 17.
F. densiflora, *D. C.* Cat. Monsp. (1813), p. 113; and Fl. Fr. Vol. V. p. 588. *Gr. & Godr.* Fl. de Fr. vol. i. p. 68. *Godr.* Fl. de Lorraine, Vol. I. p. 31. *Coss. & Germ.* Fl. des Environs de Paris, ed. ii. p. 99.
F. calycina, *Bab.* Trans. of Bot. Soc. Edin. Vol. I. p. 34.

Racemes very dense while in flower, elongated in fruit. Sepals very broadly ovate, acute, toothed, about half the length of the flower and exceeding it in breadth. Lower petal abruptly enlarged at the tip. Pedicels of the fruit ascending or ascending-patent, about as long as the bracts. Fruit rugose when dry, globular, scarcely compressed, rounded at the apex where there is a very small apiculus, on each side of which there are two small shallow pits. Leaves twice or thrice pinnate; the ultimate leaflets wedge-shaped, deeply cut; segments flat or slightly channeled, strap-shaped or linear.

A weed in cultivated ground, in hedges and by roadsides. Apparently local. It occurs in Kent, Surrey, Shropshire; in Haddingtonshire it is very common, and I have also seen it in the counties of Edinburgh, Linlithgow, and Forfar.

England, Scotland. Annual. Summer, Autumn.

Stem 1 to 3 feet long, weak, fragile, diffusely branched, or in small examples erect and nearly simple. Leaves twice or thrice ternately-pinnate; the ultimate segments rather short and narrow, often appearing narrower than they really are from being channeled. Petioles of the leaves sometimes acting as tendrils. Racemes about an inch long when in flower, elongated to nearly double this length in fruit, on very short stalks, opposite the leaves. Flowers $\frac{1}{4}$ to $\frac{1}{3}$ inch long, including the spur, which is nearly one-third the length of the upper petal, and blunt. Sepals roundish-ovate, acuminate, much produced backwards behind the point of attachment, finely toothed, membranous, whitish tinged with green on the central line and tipped with purplish rose-colour. Upper and lower petals purplish rose-colour, the lateral petals whitish, with a red keel, all tipped with dark purple; the upper petal has a very decided tint of green at the apex, and the lower petal, which is spatulate, has a slighter tinge of the same colour on the expanded extremity. Pedicels sometimes a little longer and sometimes a little shorter than the coloured bracts, dilated at the apex. Fruit about $\frac{1}{12}$ inch in each diameter, globose, very slightly compressed, with a very small apiculus formed by the remains of the style. Plant greyish green, glaucous.

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* The Plate is E. B. S. No. 2876, without alteration.

The much smaller flowers, and leaves with narrower segments, distinguish this plant at first sight from all the forms of F. capreolata; besides which there are the more important differences of the spatulate lower petal, and fruit pedicels not much exceeding the bracts in length. I have adopted the name of Lagasca, as it appears to be the first which has been applied exclusively to this plant. It is, however, extremely inappropriate, as the plant often has the flowers nearly as large as F. officinalis, and from their being packed closely together produce the impression of being larger than they really are. De Candolle's name of densiflora is much more expressive, and, in the opinion of MM. Grenier and Godron, undoubtedly belongs to this plant; but as micrantha is most generally used, I have not considered it expedient to depart from it. Calycina is the best, but unfortunately of more recent date.

Close-Flowered Fumitory.

SPECIES III.—FUMARIA OFFICINALIS. *Linn.*

PLATE LXXVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. III. Fig. 4454.

Racemes rather lax, much elongated in fruit. Sepals ovate-lanceolate, acute, toothed, about one-third the length of the tube of the corolla, and about half as broad. Lower petals abruptly enlarged at the tip. Pedicels of the fruit ascending or ascending-patent, longer than the bracts. Fruit rugose when dry, depressed-globular, slightly compressed, longer than broad, truncate or retuse at the apex, with a very small apiculus, on each side of which there is a large shallow pit. Leaves twice or thrice pinnate; the ultimate leaflets wedge-shaped, deeply cut; segments flat, elliptical, or elliptical-linear.

A weed in cultivated ground, in hedges, roadsides, and waste places. Very common throughout the whole of Britain.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stem 1 to 2 feet long, diffusely branched, ascending, or in large examples weak and supporting itself by the petioles. Leaves twice or thrice ternately pinnate; the ultimate leaflets wedge-shaped,

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* The Plate is E. B. 589, with dissections added by Mr. J. E. Sowerby.

deeply cut; segments flat, elliptical or oblong-elliptical, rarely linear-elliptical. Racemes about 1 to 1½ inch long when in flower, elongated to nearly double this length in fruit, stalked, opposite the leaves. Flowers ¼ to ⅜ inch long, including the spur, which is scarcely one-third the length of the upper petal, and blunt. Sepals ovate-lanceolate or lanceolate, slightly produced backwards behind the point of attachment, toothed, one-half to one-third as broad as the corolla tube, membranous, rose-colour. Petals dark or pale purplish rose-colour, tipped with dark purple; the lower petal spatulate. Pedicels of the fruit invariably longer than the coloured bracts, enlarged at the apex. Fruit about $\frac{1}{12}$ inch long by $\frac{1}{10}$ broad. Plant dull green, glaucous.

The narrow sepals and the truncate or retuse fruit much broader than long, sufficiently distinguish this species from both the preceding; and the lower petal with an abrupt enlargement at the tip is a further mark by which its luxuriant climbing forms may be distinguished from F. capreolata. I have had what seems to me to be a small-flowered specimen of this plant sent me under the name of F. Wirtgeni (Koch) by Dr. Wirtgen, and I have cultivated specimens raised from seeds sent to Mr. Hewett C. Watson, under the same name, which belong to F. Boræi. Koch, however, describes his plant as having the flowers of F. officinalis and the fruit of F. Vaillantii. F. media (Loisel) appears to be only a state of F. officinalis.

Common Fumitory, Common Earth-Smoke.

French, *Fumeterre Officinale.* German, *Der Gemeine Erdrauch, Taubenkropp.*

In Kent this is often called Wax Dolls, from the doll-like appearance of the little flowers.

This plant is found more or less wherever corn is cultivated. Though a persevering and troublesome weed, it is one the appearance of which every farmer may regard as an indication of good, deep, and rich land,—a circumstance not unnoticed by England's greatest poet, when speaking of the rich but unproductive soil of France, laid bare and left uncultivated by the horrors of war. He makes the Duke of Burgundy, in the play of "King Henry V.," to say,—

> "Why that the naked, poor, and mangled peace,
> Dear nurse of arts, plenties, and joyful births,
> Should not, in this best garden of the world,
> Our fertile France, put up her lovely visage?
> Alas! she hath from France too long been chased,
> And all her husbandry doth lie on heaps,
> Corrupting in its own fertility.
> Her vine, the merry cheerer of the heart,
> Unpruned dies; her hedges even-pleach'd,
> Like prisoners wildly overgrown with hair,
> Put forth disorder'd twigs; her fallow leas
> The darnel, hemlock, and rank *fumitory,*
> Doth root upon."

And again, in "King Lear," Cordelia says,—

"Alack! 'tis he; why, he was met even now,
As mad as the vex'd sea,—singing aloud,
Crown'd with rank *fumiter* and furrow-weeds,
With harlocks, hemlock, nettles, cuckoo-flowers,
Darnel, and all the idle weeds that grow
In our sustaining corn."

The expressed juice of this plant was at one time a favourite remedy with herbalists for skin diseases, and had a reputation as an anti-scorbutic. Mr. T. J. Pettigrew has secured an old medical manuscript from the Royal Library at Stockholm, which is traced back to the fourteenth century, and is supposed to be a poetical "system of health," composed by the celebrated physician John of Milan, in which is an account of the manifold virtues of the Fumitory; commencing thus:—

"*Furmiter* is erbe, I say,
Yt springyth i April et in May,
In feld, in town, in yard, et gate,
Where lond is fat and good in state.
Dun red is his flour,
Ye erbe smoke lik in colowur,
Ageyn feuerys cotidian,
And ageyn feurys tertyen,
And ageyn feurys quarteyn
It is medicyn souereyn."

Burton, in his "Anatomy of Melancholy," speaks of it as a plant not "to be omitted by those who are misaffected with melancholy, because it will much help and ease the spleen." Sir John Hill, in his Herbal, recommends the leaves of the Fumitory to be smoked, as a remedy "for disorders of the head;" and in more modern days Dr. Cullen, who paid great attention to the qualities of our native plants, recommended it to be used in diseases of the liver, and says "its remarkable virtues, however, are those of clearing the skin of many disorders." Since his day the use of the Fumitory in medicine has been generally abandoned, lingering only among the "simples" of the herbalist in this country, and in the Japanese Pharmacopœia, if there be one. Clare, one of our old pastoral poets, alludes to its use as a cosmetic thus:—

"And *Furmitory* too, a name
Which Superstition holds to Fame,
Whose red and purple-mottled flowers
Are cropped by maids in weeding hours,
To boil in water, milk, and whey
For washes on a holiday,
To make their beauty fair and sleek,
And scare the tan from summer's cheek;
And oft the dame will feel inclined,
As childhood's memory comes to mind,
To turn her hook away, and spare
The blooms it loved to gather there."

Since that time other and perhaps more injurious applications have taken the place of this herb in the mysteries of the toilet, for we can scarcely believe that the words of old John Ray, the naturalist, would be better received now by the votaries of fashion than they were in his own day, when he said, "No better cosmetics than a strict temperance and purity, modesty and humility, a gracious temper and calmness of spirit. No true beauty without the signatures of these graces in the very countenance."

SPECIES IV.—FUMARIA TENUISECTA.*

PLATES LXXVII. LXXVIII.

Racemes short, elongated in fruit. Sepals ovate-lanceolate or linear-lanceolate, acute, toothed, from one-sixth to one-tenth the length of the tube of the corolla, and not above half or one-third its breadth. Lower petal abruptly enlarged at the tip. Pedicels of the fruit ascending or ascending-patent, equal to or a little exceeding the bracts. Fruit distinctly rugose when dry, globular, slightly compressed, rounded, or a little pointed at the apex, with a very small apiculus, on each side of which there is an indistinct shallow pit. Leaves twice or thrice pinnate, the ultimate leaflets wedge-shaped, very deeply cut, segments flat or slightly channelled, strap-shaped, linear or sub-filiform-linear.

SUB-SPECIES I.—**Fumaria Vaillantii.** *Loisel.*

PLATE LXXVII.†

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. I. Fig. 4452.

Racemes rather lax in flower. Sepals lanceolate, about one-tenth the length of the tube of the corolla, and one-third of its breadth. Fruit pedicels longer than their bracts. Mature fruit rounded (not pointed) at the summit. Segments of the leaflets flat, very narrowly elliptical or strap-shaped.

A weed in cultivated ground. Rare and local. About Saffron Walden in Essex, and in several places in the southern part of Cambridgeshire. I have myself collected it near Cuxton, Kent, and possess a specimen from the foot of Box Hill, Surrey; also one from Mr. J. G. Baker, from Cawton, north-west Yorkshire.

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* I cannot consider F. Vaillantii and parviflora as more than sub-species; but Lamarck's excellent description of F. parviflora, in Encycl. Méth. Vol. II. p. 567, leaves no doubt that the plant he intended by this name was the one now generally known as F. parviflora, as his description agrees well with this plant in the very particulars in which it differs from F. Vaillantii. I have, therefore, not ventured to use parviflora as a name for the aggregate species, considering that name to belong exclusively to one of the sub-species. My F. tenuisecta includes the British sub-species F. parviflora (Lam.), Vaillantii (Lois.), and a few Continental forms distinguished by M. Jordan, such as F. glauca and F. laggeri—with which I am quite unacquainted.

† The Plate is E. B. S. 2877 unaltered, except by the removal of a sprig and magnified flower and fruit of F. parviflora.

England. Annual. Summer and Autumn.

Stem 6 inches to 1 foot high, diffusely branched, with the branches ascending. Leaves with the lacineæ very narrow, the petioles never acting as tendrils. Racemes ½ to ¾ inch long when in flower, and about 1 inch long when in fruit, on short stalks opposite the leaves. Sepals extremely minute, resembling scales, whitish. Flowers about ¼ inch long. Spur of the upper petal about one-third of its length. Petals purplish rose-colour, the lateral ones tipped with dark purple. Pedicels of the fruit nearly twice as long as the bracts. The young fruit is pointed at the top, but becomes rounded when mature, and is about $\frac{1}{12}$ inch in diameter. Plant greyish green, slightly glaucous.

The extremely small sepals, smaller flowers, and the round fruit distinctly verrucose when dry, distinguish this plant from the upright states of F. officinalis. Mr. G. S. Gibson states that the rose-coloured flowers become whitish as they fade. The sepals must be examined at a very early stage, as in this and F. parviflora they are much more caducous than in the preceding species.

Le Vaillant's Fumitory.

French, *Fumeterre de Vaillant.* German, *Vaillants Erdrauch.*

This plant was named after Sebastian Vaillant, a distinguished French botanist, the friend of Tournefort, and successor to Fagon as Professor of Botany in the Jardin du Roi. His great work, entitled "Botanicon Parisiense," was published in 1727, after his death, by his literary executor Boerhaave. The genus Vaillantia of De Candolle was named in honour of him.

SUB-SPECIES II.—**Fumaria parviflora.** *Lam.*

PLATE LXXVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. III. *Pap.* Tab. I. Fig. 4451.
F. leucantha, Viv. Cors. i. p. 12.
F. Vaillantii, partly *Bab.* E. B. S. Vol. IV. No. 2877 (not in other writings).

Racemes dense while in flower. Sepals triangular ovate, about one-eighth the length of the tube of the corolla, and one-half its breadth. Fruit pedicels about equal in length to the bracts. Mature fruit pointed at the summit. Segments of the leaflets channeled, narrowly strap-shaped or linear.

A weed in cultivated ground. Rare, but apparently more abundant than F. Vaillantii. I have found it myself near Dartford,

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[*] The Plate is the original E. B. 590, with the magnified flower and fruit added from E. B. S. 2877, and the colouring corrected.

Cuxton, and Boxley, in Kent; near Leatherhead, Surrey; also near Long Niddrie and Dirlton, Haddingtonshire. I possess specimens from Essex, Cambridgeshire, Hertfordshire, and near Scarborough in Yorkshire. One or other of these sub-species has been reported from various localities from Hampshire to Edinburgh, and also from Ireland; but the two have been so confounded in this country that I am obliged only to indicate those localities from which I have seen specimens.

England, Scotland, Ireland? Annual. Summer, Autumn.

Extremely like F. Vaillantii, but often attaining to a greater height, as I have sometimes seen it about 18 inches high. The stem branches more from the base. The leaves are much more finely divided, the lacineæ much narrower, grooved, and much more glaucous. The flowers are closer together, smaller, about $\frac{1}{5}$ inch long, the spur shorter in proportion, being only about a quarter the length of the upper petal, the colour white, the lateral petals tipped with dark purple; sepals larger. The fruit pedicels are shorter, scarcely exceeding the fruit in length, and the fruit is usually slightly pointed at the apex, even when quite mature.

By these points of difference F. parviflora may generally be easily distinguished from F. Vaillantii. Mr. Gibson remarks that the flowers of F. parviflora change from white to rose-colour as they fade, which is the exact converse of what he states of F. Vaillantii: though this is by no means always the case, I have frequently found them do so, and it is possibly this change of colour which has led Dr. Walker Arnott to describe his var. α of F. parviflora as rose-coloured, quoting under it E. B. 590, where there can be no doubt that the colouring has been taken from a fading specimen of the white-flowered plant.*

Small-flowered Fumitory.

French, *Fumeterre à Petites Fleurs.* German, *Der Kleinblüthige Erdrauch.*

EXCLUDED SPECIES.

PAPAVER NUDICAULE. *Linn.* (E. B. 2681.)

An arctic plant said to have been found by Sir Charles Giesecké "growing among rocks and glens in the hills at Achil Head in the North-west of Ireland." There can be no doubt that it never grew there.

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* Mr. Bentham considers all the preceding forms of Fumariæ to be referable to a single species, to which he gives the name of F. officinalis.

ORDER V.—CRUCIFERÆ.

Annual or perennial herbs, or rarely under-shrubs, with watery often somewhat acrid juice. Leaves alternate (very rarely opposite), entire, or dissected; the radical leaves often runcinate; the stem leaves auriculate at the base, and destitute of stipules. Flowers usually white, yellow, or purple, in racemes, which are commonly terminal. In many species the inflorescence is corymbose until after flowering, when it lengthens into a raceme. Pedicels usually not springing from bracts. Flowers perfect, regular, or radiant. Sepals 4, deciduous or caducous, imbricated in 2 whorls or rarely valvate, the outer or lateral pair often bulging at the base. Petals 4, spreading in the form of a cross, and alternating with the sepals, convolute or imbricate in æstivation, generally equal, narrowed into a claw at the base; the limb entire, emarginate, or bifid. Receptacle with 2 to 4 (rarely 6) glands. Stamens 6, hypogynous, generally free, the two lateral ones with shorter filaments than the other four, which are equal, and in pairs opposite the inner pair of sepals. Anthers 2-celled, dehiscent longitudinally. Ovary free, of 2 carpels situated right and left of the axis; placentas parietal; ovary most frequently divided longitudinally into two cells by a partition (replum) uniting the placentas. Styles united, often undistinguishable. Stigma simple or bilobed. Ovules several or solitary in each cell, generally suspended, campylotropous or amphitropous, with the raphe ventral. Fruit a long pod (siliqua) or short pouch (silicula), 2-celled, or rarely 1-celled by the dissepiment (replum) between the placentas being incomplete, generally opening by two valves, rarely indehiscent, or lomentaceous. Seeds ex-albuminous; embryo bent or curled, rarely coiled; cotyledons plane with the radicle applied to their edges (accumbent), or plane with the radicle applied to the back of one of them (incumbent), or folded longitudinally (conduplicate) with the radicle lying at the back of one of them, rarely twice folded or spirally coiled.

Exceptions in the British Genera.—The petals are occasionally absent by abortion in Cardamine impatiens, Cochlearia Armoracia, and Lepidium ruderale; and the stamens are only 2 in Lepidium ruderale, and only 4 in Cardamine hirsuta; and in Senebiera didyma the stamens are seldom more than 4, and sometimes only 2.

SECTION I.—ARTICULATÆ.*

Fruit with transverse partitions, generally breaking across into two portions, of which the lower is often abortive and stalk-like, and the upper portion 1- or many-seeded, and not splitting in 2 valves.

TRIBE I.—CAKILINEÆ.

Cotyledons flat, with the radicle applied to their edges (accumbent) or oblique. Pod rather short, without valves.

GENUS I.—**CAKILE.** *Tournef.*

Sepals nearly erect, the two outer gibbous at the base. Petals equal, entire, with long claws. Filaments without teeth. Stigma sessile. Pod of two joints, which are indehiscent and without valves; the lower joint persistent, obconical, sub-truncate at the apex; upper joint deciduous, tetragonal-ancipitate; each joint 1-celled and 1-seeded, or the lower one barren.

Glabrous, branched annuals, with entire or pinnatifid fleshy leaves, and corymbs or short racemes of bractless white or lilac flowers. Pods in a lax raceme.

French, *Caquille.* German, *Meersenf.*

Cakile is an old Arabic name appropriated to this or some allied genus.

SPECIES I.—**CAKILE MARITIMA.** *Scop.*

PLATE LXXIX.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. I. Fig. 4158.
Bunias Cakile, *Linn.* Sp. Pl. p. 936. *Sm.* Eng. Bot. No. 231.

Upper joint of pod ensiform.

On sandy sea-shores. Rather frequent all round the coast of Britain.

England, Scotland, Ireland. Annual. Summer, Autumn.

A bushy plant, with stems from 6 to 18 inches long, branched from the base; the branches curved, and ascending at the apex. Leaves 2 to 3 inches long, elliptical or oblong, pinnatifid or entire. Flowers $\frac{1}{2}$ inch across, corymbose, with the peduncles about equal to the calyx in the fully expanded flower. Sepals oval, with a membranous margin, diverging very little. Petals white or lilac, with long claws. Pods in lax racemes; the pedicel rather shorter than the lower joint, which is about ¼ inch long, and widest at the summit. The upper joint is about ¾ inch long, and tapers towards the apex, while the base fits closely over the truncate extremity of the lower joint, which has a projection in the centre and an elevated margin at the two sides, and between the centre and the elevated margin there is frequently a small tooth. The surface of the pod is nearly smooth when fresh, but with prominent nerves or ribs when dry. Plant quite glabrous and slightly glaucous.

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* In the arrangement of the genera I have slightly departed from that of Bentham and Hooker in their "Genera Plantarum" in order to retain the divisions of Lomentaceæ, Siliquosæ, and Siliculosæ.

† The Plate is E. B. 231, unaltered.

Purple Sea Rocket.

French, *Caquillier Maritime.* German, *Der See Meersenf.*

The specific name of this plant indicates its place of growth. It is by the sea-coast and on sandy shores that we chiefly find its pretty green branches and pale purple flowers. Like most other Cruciferous vegetables, it may be eaten with impunity, and is even regarded as forming a pleasant salad mixed with other plants. It has been reputed to have active cathartic qualities. Pliny, according to Gerarde, gives it a reputation which might have been valuable in the ancient days of corporal punishment. He says: "Whosoever taketh the seed of Rocket before he be whipt, shall be so hardened that he shall easily endure the paines." He adds: "The root and seed stamped and mixed with vinegar and the gall of an ox taketh away freckles, lentiles, blacke and blewe spots, and all such deformities of the face." The older botanists knew this plant by the name of Eruca marina.

TRIBE II.—RAPISTREÆ. *Scop.*

Cotyledons folded longitudinally (conduplicate), with the radicle at the back of one of them. Pod short, without valves.

GENUS II.—CRAMBE. *Linn.*

Sepals spreading, equal at the base. Petals equal, entire, with short claws, 4 lower filaments usually with a tooth near the summit on the outer side. Stigma sessile. Pod of two joints, which are indehiscent and without valves; the lower one very small, stalk-like, persistent, barren; the upper one large, globose, deciduous, 1-celled, and 1-seeded.

Branched herbs or under-shrubs, often glaucous and glabrous, or clothed with simple hairs. Pedicels without bracts, racemose at least in fruit, racemes combined to form terminal panicles.

French, *Le Crambé.* German, *Der Meerkohl.*

The generic name Crambe is derived from the Greek word κραμβος (*krambos*), arid, dry, because the plants usually grow in the sand.

SPECIES I.—CRAMBE MARITIMA. *Linn.*

PLATE LXXX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. II. Fig. 4164.

Root leaves stalked, roundish-oval, sinuated and waved at the edges. Plant glabrous and very glaucous.

On sandy and shingly sea-beaches. Thinly scattered round the coast of England, the west coast of Scotland as far north as Islay; very scarce on the east coast of Scotland, where it does not extend beyond the southern shore of the Frith of Forth.

England, Scotland, Ireland. Perennial. Summer.

Rootstock deeply buried in the sand or shingle, thick and fleshy, branched, producing subterranean shoots and numerous branched spreading stems about 2 feet high. Leaves broadly oval, coarsely toothed and sinuated, resembling those of a cabbage but much more glaucous and waved at the edges; the lowest leaves on long stalks, and very large; the upper leaves much smaller, and on shorter stalks. Flowers about ½ inch across, white, on slender pedicels fully twice the length of the calyx; corymbs terminating the branches, which are so arranged as to form a compound corymb. Fruit in lax racemes combined into a panicle. Fruit pedicels ascending. Lower joint of the pod about ⅛ inch long, and a little thicker than the pedicel. Upper joint nearly ½ inch long by ⅜ inch broad, roundish oval, slightly pointed at the apex. Whole plant fleshy, glabrous, intensely glaucous.

Sea-Kale.

French, *Crambé Maritime.* German, *Der Gemeine Meerkohl.*

The specific name indicates the habitat of this plant. Its native haunts are by the sea-coast; but it is cultivated largely inland, and in almost every garden in England. It is somewhat uncertain as to whom the merit is due of the first attempt to introduce this plant into cultivated gardens with a view to its use as an esculent vegetable. Bryant and Parkinson state that from a very early time it was cut and eaten by the inhabitants of the coasts where it grows wild. Sir William Jones, of Chelsea, asserts that he saw bundles of it exposed for sale in the market at Chichester in 1753; and Maher observes, in the Horticultural Transactions, that "the Crambe maritima was known and sent from this kingdom to the Continent more than two hundred years ago." About the year 1767 Dr. Lettsom cultivated Sea-Kale in his own garden at Grove Hill, and through him it was brought into general use. At the present time it is a common vegetable on the stalls of Covent Garden Market, and is occasionally seen in Scotland. In France it is seldom eaten. In 1807, Bastieu describes the "Chou marin d'Angleterre," but he appears to have made his experiments on the green leaves instead of the broad white shoots of the plant, and to have been accordingly disgusted with its flavour, and to have denied its excellence. The careful cultivation of Sea-Kale greatly adds to its delicacy and flavour; by covering the shoots from the light they become tender and white, and are thought by many to be equal if not superior to asparagus.

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* The Plate is E. B. 924, with fruit added by Mr. J. E. Sowerby.

TRIBE III.—RAPHANEÆ. *Linn.*

Cotyledons conduplicate. Pod elongate, without valves.

GENUS III.—RAPHANUS. *Linn.*

Sepals erect, the two outer gibbous at the base. Petals equal, entire or emarginate, with long claws. Filaments without wings or teeth. Style slender, conical. Pod of two joints, which are indehiscent and without valves; the lower one very small, stalk-like, persistent, barren; the upper elongate-cylindrical or moniliform, deciduous or persistent, with several 1-seeded cells formed by transverse partitions; beak conical.*

Annual or biennial glabrous or hispid branched herbs, with the root enlarged and fleshy in the biennial species. Lower leaves lyrate. Racemes very short (almost corymbose) in flower, elongate in fruit. Flowers pale yellow or white, veined or tinged with pink or purple. Pods often spongy.

The name of this genus is from ραδυως (*raduos*), early, and φαινω (*phaino*), I appear, from its speedy growth or appearance from the seed. The English name Radish comes from *radix*, a root.

SUB-GENUS I.—RAPHANISTRUM. *Tournef.*

Upper joint of the pod deciduous, hard underneath the fleshy outer surface, more or less distinctly contracted between the seeds, usually ribbed when dry. Plant hispid or scabrous.

SPECIES I.—RAPHANUS RAPHANISTRUM. *Linn.*

PLATE LXXXI.†

Raphanistrum segetum, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. III. Fig. 4172.

Root slender. Lower leaves few, scarcely forming a rosette, lyrate, with few distant segments. Beak about three times as long as the last bead of the pod; beads 4 to 8 in number; pods rather indistinctly beaded and faintly ribbed when ripe.

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* For a detailed account of the structure of the pod, see Bromfield's "Flora Vectensis," p. 46.

† The Plate is E. B. 856, with a flower of the white variety added by Mr. J. E. Sowerby.

Very common in cornfields and cultivated ground throughout the whole kingdom.

England, Scotland, Ireland. Annual. Summer, Autumn.

Root annual, scarcely thickened. Stem branched, with the branches erect or spreading. Lower leaves lyrate, with a large, rounded, often 3-lobed terminal segment, and 6 or 7 lateral ones, decreasing in size towards the base, sometimes opposite and sometimes alternate, all coarsely serrated; uppermost leaves lanceolate, simply serrate. Flowers about $\frac{3}{4}$ inch across, pale yellow or white, with lilac veins. Pods cylindrical, slightly constricted between each seed. Mature pods $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, breaking away from the first barren segment, which is about $\frac{1}{10}$ inch long, and little thicker than the pedicel; beak sword-shaped, nearly $\frac{3}{4}$ inch long. Plant yellow-green, hispid, with short, reflexed, bristly hairs.

Many authors describe the fruit of this plant as if it always broke transversely into 1-seeded segments. This I have not found to be the case. The pods fall off whole, leaving the barren, stalk-like first joint attached to the pedicel. The white-flowered state is common near London, but I have never seen it in any part of Scotland.

Wild Charlock, Wild Radish, Jointed Charlock, White Charlock.

French, *Radis Sauvage.* German, *Der Acker Rettig.*

The repetition of a generic name with the addition of "istrum" or "astrum" applied to a species, indicates that it is a useless or contemptible member of that genus, or bears a false resemblance to the species which comprise it. The seeds of the Wild Radish are somewhat pungent, and contain a quantity of oil; in some places they are used as a substitute for mustard. In Sweden, where the plant abounds in the cornfields, the seeds often get mingled with the corn. There is a notion, encouraged by Linnæus, that the use of bread made from flour in which this admixture has taken place is injurious, and that it induces peculiar convulsive fits and spasms; M. Villars, however, controverts this notion by observing that in Dauphiny, where in cold, damp seasons the weed abounds, and is constantly mixed with the corn, no such disease is known, neither can such an effect be traced in England, where we have the Wild Radish very commonly in our fields. There can be little doubt that the attacks of disease mentioned by Linnæus are traceable to some fungoid growth in the grain during wet and unhealthy seasons. Botanists and agriculturists who have examined the matter have no hesitation in pronouncing this little plant to be as harmless as any other of its family, an excellent food for domestic quadrupeds, and a favourite with bees. The common garden Radish (R. sativus) is a Chinese plant, or at least grows wild in that country; it was, however, grown by the Egyptians and Greeks in very early times, and there is some difficulty in determining its precise origin. Mr. Bentham thinks it may possibly be only a variety of our Wild Radish. It grows very easily and commonly in our gardens, and is one of the commonest forms of uncooked vegetable food on our tables in the early spring. The Roman physicians recommended that Radishes should be eaten raw with bread and salt in the morning before any other food; and we are reminded that it was considered a pleasant addition to a repast even in luxurious Rome by our own poet Thomson's description of an evening meal :—

> " The customary rites
> Of the last meal commence—a Roman meal,
> Such as the mistress of the world once found
> Delicious, when her patriots of high note,
> Perhaps by moonlight, at their humble doors,
> And under an old oak's domestic shade,
> Enjoy'd spare feast,—a *radish* and an egg."

The variety of the cultivated Radish is very great, and its uses are not merely confined to its edible properties. Chemists formerly scraped the colouring matter from the rind to make a blue substance, which would turn red by the addition of acids, in the same manner as litmus is used at the present day. Gerarde also reports that " the root stamped with honey and the powder of sheep's heart dried, causeth the hair to grow in short space."

SPECIES II.—RAPHANUS MARITIMUS. *Sm.*

PLATE LXXXII.*

Raphanistrum maritimum, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. III. Fig. 4174.

Root thickened. Radical leaves numerous, forming a rosette, lyrate with numerous approximate segments, or interruptedly lyrate. Pod distinctly beaded; beads 1 to 3, rarely 4, strongly ribbed when dry; beak about twice as long as the last bead of the pod.

On sands and cliffs by the sea. Local; on the south and west coast of England, and west coast of Scotland as far north as Bute.

England, Scotland, Ireland. Biennial or perennial. Summer, Autumn.

Root producing a rosette of leaves from 6 to 18 inches long. Stem much stouter than in R. Raphanistrum, and with the flowering branches more numerous, more diverging, and more rigid. Radical leaves with numerous approximate pinnæ, which are sometimes directed backwards, so that the leaf becomes runcinate; and when the leaf is large, there are usually smaller segments produced along the common petiole, alternating with the regular pinnæ. The flowers are rather smaller than in R. Raphanistrum, and almost always yellow. I have only observed the white variety in the Channel Islands. The pod has generally fewer beads, and these beads are commonly larger and more deeply furrowed.

Some authors describe the beak or empty part of pod as being

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* The Plate is from a drawing made by Mr. J. E. Sowerby, taken from a Wigtonshire specimen; the root leaf from a cultivated plant grown in Mr. H. C. Watson's garden.

equal in length to the last bead or segment of the pod; but although it is variable in length, I have seldom seen it so short as this. The beak itself is more subulate and less compressed than in R. Raphanistrum, and the colour of the whole plant is a deeper green.

Mr. Hewett C. Watson finds this plant retains all its characters in cultivation. He believes R. maritimus to be truly native, and the preceding to be merely an introduced colonist.

Sea Charlock, or Sea Radish.

SECTION II.—SILIQUOSÆ.

Fruit a siliqua, usually more than four times as long as broad, sub-cylindrical or linear (except in some of the species of Nasturtium), not divided by transverse partitions, opening when ripe by two valves, which split away from the replum.

TRIBE IV.—BRASSICEÆ.

Cotyledons longitudinally folded (conduplicate). Pod elongate, 2-valved.

GENUS IV.—BRASSICA. *Bois.*

Sepals erect or spreading, with lateral ones sometimes gibbous at the base. Petals equal or entire, with the claw usually about equal to the limb. Filaments without wings or teeth. Pod sub-cylindrical, often more or less compressed, parallel to the partition. Style persistent, forming a conical, subulate, ensiform, or ovoid beak. Seeds globose or ovoid.

I follow Mr. Bentham, who in his "Handbook" adopts M. Boissier's views in uniting Diplotaxis with Brassica (as it is limited in the "Genera Plantarum"). The separation between the two appears to be merely artificial.

The generic name is derived from an old Celtic word *bresic*, a cabbage. Varro derives the name from the Latin *præseco*, to cut off, because it is cut from the stalk.

SUB-GENUS I.—SINAPIS. *Linn.*

Sepals spreading, glabrous. Seeds sub-globular, arranged in a single row down the middle of each cell of the pod.

The name of the genus Sinapis comes from *σιναπι* (*sinapi*). The Celtic word *nap* is a designation applied to all plants resembling a turnip or cabbage.

SPECIES I.—BRASSICA SINAPISTRUM. *Bois.*

PLATE LXXXIII.*

Sinapis arvensis, *Linn.* *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXVI. Fig. 4425.
Brassica Sinapistrum, *Benth.* Handbook Brit. Fl. p. 92.
Sinapis arvensis, *Linn.* et *Auct. Plur.*

Leaves oval or oblong; the lower ones stalked and sub-lyrate; the upper ones irregularly sinuated and toothed; the uppermost sessile, toothed. Pods ascending, generally glabrous, sub-cylindrical, slightly beaked; valves with 3 prominent ribs; beak deciduous, conical, slightly 2-edged, shorter than valves. Seeds 3 to 8 in each cell, very dark brown, smooth (to the naked eye).

A weed in cultivated ground. Very common. Occurs throughout the whole kingdom.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stem erect, or ascending, furrowed, 1 to 2 feet high, more or less branched; branches spreading. Leaves variable in shape, frequently all undivided in small examples, but in luxurious specimens the lower leaves have usually a few small segments on the petiole below the main portion of the lamina. Flowers sub-corymbose, about $\frac{3}{4}$ inch across, bright yellow. Pods 1 to 2 inches long, in a lax raceme; pedicels in flower about equal to the calyx, in fruit much shorter than the pod. Beak of the pod about $\frac{3}{8}$ inch long, frequently containing a single seed. Whole plant dull green; the stem, leafstalks, peduncles and pedicels rough, with short, reflexed, bristly hairs.

This plant closely resembles Raphanus Raphanistrum, but the leaves are much less divided, the sepals spreading, and the petals much brighter yellow. When in fruit the two cannot be confounded, as in Raphanistrum the pod has no valves, and doubtless represents the beak of Brassica Sinapistrum.

The Charlock, or Corn Mustard.

French, *Moutarde des Champs.* German, *Der Acker Senf.*

It is a troublesome weed on arable land throughout England, but is capable of being used when boiled as a pot herb, and is so employed in Sweden and Ireland. It is much relished by cattle, and especially by sheep, but is nowhere cultivated as fodder. The seeds form a good substitute for mustard, and have been used as food for birds, but being pungent are not desirable for them.

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* The Plate is E. B. 1748, unaltered.

SPECIES II.—BRASSICA ALBA. *Bois.*

PLATE LXXXIV.*

Sinapis alba, *Linn.* *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXV. Fig. 4424.
Brassica alba, *Benth.* Handbook of Brit. Fl. p. 92.
Sinapis alba, *Linn.* et *Auct. Plur.*

Leaves all pinnatifid (or sub-lyrate) and stalked. Pods spreading, hispid, sub-cylindrical, beaded; valves each with 5 prominent ribs; beak not deciduous, flattened, ensiform, usually much longer than the valves. Seeds 2 or 3 in each cell, commonly dull yellow, indistinctly punctured (to the naked eye).

A weed in cultivated ground. Not very common, but generally distributed throughout Britain.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stem erect, furrowed, 1 to 3 feet high, branched; branches ascending. Leaves pinnatifid, the divisions of the lower and middle leaves often separated quite down to the midrib, so that the leaf becomes pinnipartite, terminal lobe often not much larger than the lateral ones; upper leaves with the incisions not nearly so deep as in the lower ones. Flowers sub-corymbose, about ½ inch across, bright yellow. Pedicels longer than the calyx when in flower, about as long as the pod without the beak in fruit. Pods rather more than 1 inch long, including the beak, which is longer than the valves, and often contains a seed at the base; the beak is less hispid than the valves, and in this species remains until the latter separate, while in B. Sinapistrum it falls off before that takes place. Seeds generally pale in this country, but in the South of Europe they are often reddish brown. Plant bright green, hispid, with reflexed hairs.

The pinnatifid leaves and the short, few-seeded pods with long ensiform beaks, distinguish this plant from B. Sinapistrum. The lower pods also spread horizontally, while in the preceding species they are ascending.

White Mustard.

French, *Moutarde Blanche, Navette d'Été, Graine de Beurre.* German, *Weisser Senf.*

The specific name signifies its characteristic appearance, *white.* The common White Mustard is a frequent plant in fields and roadsides. A pungent powder is obtained from the seeds when ground, but much inferior in strength to the Black Mustard. This species is chiefly cultivated as a small salad, and is used like cresses while in the seed-leaf. When these are young and tender they are pleasant and palatable, but when more advanced they are rough and pungent. Some years ago the administration of White Mustard seeds whole in large quantities as a medicine was a frequent practice. It was considered by some practitioners as a good remedy for disorders of the digestion; but the effects were so frequently the reverse of beneficial, having in many cases caused inflammation owing to their retention in the bowels, that they are now seldom if ever prescribed. The Mustard seed is peculiarly quick in vegetation. It will begin to shoot in a few hours, and with the barest possible surface to root upon. The moist surface of a piece of flannel is sufficient to nourish its vitality, and we have seen crops of green salad thus grown in a surprisingly short time. This property is made use of on board ship in order to secure the refreshment of a green and fresh salad when far from land and vegetation. Among theological writers a considerable difference of opinion has arisen as to the nature of the Mustard seed mentioned by our Lord in his discourse with his Apostles. It is, however, quite certain that the oriental plant of which he spoke was neither the Sinapis alba or nigra; and Dr. Kitto, who writes on the subject in his "Pictorial Bible," quotes a Mr. Frost, who concludes from evidence which he carefully weighs that it was undoubtedly the Phytolacca dodecandia, a tree growing abundantly in Palestine, having the smallest seed of any tree in that country, and attaining as great an altitude as any. The analogy between the two genera Sinapis and Phytolacca is, he says, very considerable in their properties, their seeds being used for similar purposes, and he was informed that the tree is called by the natives Wild Mustard. Other authors, among them Dr. Kitto himself, incline to the belief that the Mustard of Scripture was probably a species of Sinapis, rendered much larger and powerful in size and strength by the influence of climate and situation. He quotes from Alonzo de Boallo's "Travels in Chili" to prove how large a size is attained by many European vegetables under an Eastern sky. He says, "the Mustard plant thrives so rapidly that it is as big as one's arm, and so high and thick that it looks like a tree,"—an account to be received "cum grano salis."

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* The Plate is E. B. 1677, unaltered.

SPECIES III.—BRASSICA NIGRA. *Koch.*

PLATE LXXXV.*

Sinapis nigra, *Linn.* *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXVIII. Fig. 4427.
Brassica nigra, *Benth.* Handbook Brit. Fl. p. 92.
Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 59. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 77. *Coss.* Fl. des Environs de Paris, ed. ii. p. 119.
Sinapis nigra, *Auct. Plur.*

Lower leaves lyrate, sinuated, or toothed; the uppermost ones lanceolate or narrowly elliptical, entire, all stalked. Pods adpressed, nearly glabrous, somewhat 4-sided, beaded; valves acuminated at the apex, each with 1 prominent rib; beak persistent, subulate, prismatic, about equal in length to one of the beads of the pod. Seeds 2 to 4 in each cell, dark brown, punctured (to the naked eye).

On cliffs by the sea-coast, apparently wild; also a weed in cultivated ground and in waste places. Rather more frequent in England than B. alba, but certainly less so in Scotland, where the Friths of Forth and Clyde appear to be its northern limit.

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* The Plate is E. B. 969, unaltered.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stem 1 to 4 feet high, stiffer and less succulent than in B. Sinapistrum and alba, with numerous spreading branches in the upper part. Lowest leaves distinctly lyrate, with a very large sinuated terminal lobe; intermediate ones deeply sinuated, and the uppermost of all quite entire and very narrow. Flowers subcorymbose, about $\frac{1}{4}$ inch across, very bright yellow. Pedicels shorter than the calyx when in flower, and about twice as long as one of the beads of the pod in fruit. Pod $\frac{1}{2}$ to $\frac{3}{4}$ inch long; valves strongly keeled, attenuated towards the apex, so that without examination it might be supposed that the beak commenced at a lower point than it actually does; the beak is about $\frac{1}{8}$ inch long, rather more slender than the peduncle, and tapers slightly and gradually to the apex; it never contains a seed. The seeds are about half the size of those of B. alba, and more distinctly punctured. Plant dark green, more or less hispid, especially in the lower parts.

Sinapis incana of Linnæus is considered by many botanists to be a hispid variety of this species, although the greater number of authors have referred it to the following one.

Black Mustard.

French, *Moutarde Noire.* German, *Schwarzer Senf.*

A whimsical history is attached to the etymology of this plant, which is given by Dr. Withering, and may be quoted here: "In 1382 Philip the Bold, Duke of Burgundy, granted to the town of Dijon armorial ensigns with the motto 'Moult me tarde' (in old French, 'I long or wish ardently'), which being sculptured over the principal gate, by some accident the middle word became effaced. The merchant dealers in Sinapi, intending to ensign their pots with labels of the city arms, copied the imperfect motto as it then remained 'Moult tarde,' and hence the name which this Sinapi composition retains to this day." The Black Mustard is found wild in the same situations as the white kind. As a remedy in medicine the seeds have been used from a very early date by the Greek physicians. It was held in such repute by that nation, that they attributed the discovery of its virtues to Esculapius. When it was first used as a condiment does not appear, but some authors say it was in use in England among the Saxons. Tusser alludes to its domestic use and garden cultivation in the sixteenth century:—

"Maids Mustard seed gather for being too ripe,
And weather it well yer ye give it a stripe;
Then dress it and lay it in soller up sweet,
Least foistiness make it for table unmeet."

The process of grinding the seed appears to have been a recent invention. Our faithful friend Gerarde says: "The seed of Mustard pound with vinegar is an excellent sawce, good to be eaten with any grosse meats either fish or fleshe, because it doth help the digestion, warmeth the stomacke, and provouketh appetite. It also appeaseth the toothache being chewed in the mouth. It helpeth those that have their hair pulled off; it taketh away the blew and black marks that come of bruisings." According to Coles, who wrote about 1657, Mustard was grown in the neighbourhood of Tewkesbury, ground up, made into balls, and sent to London, where it was considered the best. The Black Mustard is now largely cultivated both in England and the Continent, and is consumed in great quantities both as a condiment and for the sake of its oil. In Durham the cultivation and preparation of Mustard is an important feature of trade. Before grinding, the outer husk is removed from the seeds, and they are passed under rollers, and then reduced to a finer powder in a mortar. The Mustard used at table is generally a mixture of Black and White Mustard in equal proportions; it is, however, very constantly adulterated with flour and coloured with turmeric. The French do not take away the husks from their seeds, so that the French Mustard has a blacker appearance than ours, and is more pungent, for the husks contain the acrid qualities of the plant in large quantities. The chemistry of Mustard, on which all the active properties of the seeds depend, has engaged the attention of many eminent chemists, and the results are interesting. According to the most recent inquiries, it appears that Black Mustard consists chiefly of a bland fixed oil, a peculiar bitter inodorous principle called myroxcic acid, and another principle termed myrosyne. By the addition of water an excessively pungent oil is obtained which does not originally exist in the seed, but is formed from these above-named substances by the action of water, and is called pyroxine. The saliva of the tongue applied to dry powdered Mustard eliminates this principle, and produces the pungent burning sensation so well known to us all. Manufacturers of Mustard for table use assert that pure unadulterated Mustard-flour would be too pungent to be palatable, and a mixture of the following kind is considered as the best form for use: Two bushels of black and three of white seed, yielding when ground 145 lbs. of flour, mixed to lessen the pungency and improve the colour with 56 lbs. of wheaten flour and 2 lbs. of turmeric; the acrimony is restored without the pungency by the addition of a pound of chili pods and half a pound of ginger. Although the common table Mustard serves all the purposes for which it is used, medicinally the colleges and Pharmacopœias recognize only the pure farina of Sinapis nigra. In its action Mustard is an irritant, stimulant, emetic and stomachic. As an external application in the form of a cataplasm it is one of the most effectual domestic remedies for removing pain, mitigating local inflammation, or rousing from stupor. From fifteen to twenty-five minutes is about the time necessary to endure the smarting process; if the patient be insensible it is not well to leave the application on too long lest ulceration and sloughing should ensue. The stinging pain which remains after the removal of the Mustard may be mitigated, if too violent, by sponging the part with cold water, or dropping ether on it. In large doses of two or three table-spoonfuls mixed with a tumbler of warm water it constitutes a most effectual emetic, and is most valuable as a domestic remedy in case of poisoning before medical aid can be obtained. As a condiment we hear of Mustard in the time of Shakespeare, and not less singular was the taste of the times then than is the fancy of some nowadays who eat Mustard with apple-pie. Shakespeare's gourmands thought their Shrove Tuesday feast of pancakes incomplete without the Mustard; and we read of Touchstone enlightening Rosalind "Of a certain knight that swore by his honour they were good pancakes, and swore by his honour the Mustard was naught: now" (says Touchstone), "I'll stand to it, the pancakes were naught and the Mustard was good, and yet was not the knight forsworn."

SPECIES IV.—**BRASSICA ADPRESSA.** *Bois.*

PLATE LXXXVI.*

Sinapis incana, *Linn.* *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXV. Fig. 4483.
Brassica adpressa, *Bois.* *Benth.* Handbook Brit. Fl. p. 92.
Hirschfeldia adpressa, *Mönch.* Meth. 264. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 78.
Erucastrum incanum, *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 61.
Sinapis incana, *Linn.* (?) et *Auct. Plur.*

Lower leaves stalked, lyrate, sinuated or toothed; the uppermost ones sub-sessile, lanceolate or narrowly elliptical, entire. Pods adpressed, slightly hispid or glabrous, cylindrical, somewhat 4-sided, scarcely beaded; valves truncate, not attenuated at the apex, each with a faint dorsal rib; beak cylindrical-clavate, ribbed, more than half the length of the valves. Seeds 2 or 3 in each cell, reddish brown, punctured (to the naked eye).

In sandy fields. Rare, and apparently confined to the islands of Jersey and Alderney.

Channel Islands. Biennial or Annual. Summer, Autumn.

Extremely like B. nigra, but differs in the following particulars: Root frequently biennial. Leaves less divided, and the upper ones less distinctly stalked. Pods about ⅜ inch long, of which the beak occupies about ⅛ inch; the valves the same width from the base to the apex, with the dorsal rib less prominent and the places of the seeds scarcely indicated by bead-like enlargements; beak a little narrower at its base than the valves, and then slightly enlarged towards the apex, with 8 ribs, and usually containing 1 seed. Seeds more flattened than in B. nigra. Whole plant thickly clothed with short bristly hairs, which are reflexed upon the stem; these hairs cause a greyish appearance very different in colour from the dark green of B. nigra.

Hoary Mustard.

French, *Moutarde Blanchâtre.*

SUB-GENUS II.—EU-BRASSICA.

Sepals erect, glabrous. Seeds sub-globular, arranged in a single row down the middle of the pod.

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* The Plate is E. B. S. No. 2843, unaltered.

SPECIES V.—BRASSICA OLERACEA. *Linn.*

PLATE LXXXVII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XCVII. Fig. 4438.

Radical leaves stalked, broadly-oval or obovate, with waved or sinuated margins, occasionally sub-lyrate; uppermost stem leaves oblong, entire, not dilated at the base, sessile or semi-amplexicaul; all glaucous and glabrous. Inflorescence lengthened into a lax raceme at the time the flowers expand. Sepals closed upon the claws of the petals. Beak of the pod shortly conical, not containing a seed; valves 1-nerved, with anastomosing veins.

Locally abundant and apparently indigenous on cliffs and the débris at their base in the South and West of England, particularly on the Kentish coast from Folkestone to Kingsdown. On the west coast it may be wild as far north as Tenby in Pembrokeshire, or even Carnarvonshire. It also occurs in many other places both in England and Scotland, but probably only where it has escaped from cultivation.

England [Scotland,] Ireland. Biennial or Perennial. Summer.

Stems tortuous, very thick and woody in old specimens, much branched; the flowering shoots ascending. Lower leaves often very large, the sinuations deepest towards the base; occasionally there are a few lobes on the lower part of the petiole separated from the main lamina of the leaf, so that it becomes imperfectly lyrate, but never regularly so as in the next species. Flowers nearly an inch across, pale lemon yellow, the full distance between the pedicels being reached by the time the flowers fade. Pods about 3 inches long, slightly compressed; the beak little more than ¼ inch. Plant dark bluish green with a glaucous bloom, the leaves slightly succulent.

Sea Colewort or Cabbage, Wild Cabbage.

French, *Chou Potager.* German, *Der Kohl.*

In its wild state the Cabbage forms a very wholesome vegetable, and no doubt was extensively eaten long before any attempt was made to cultivate it. All the varieties of Cauliflower, Broccoli, Brussels Sprouts, Red Cabbage, and the like, so well known to the gardener, are descendants of the Wild Cabbage.

There is no plant of greater interest to the vegetable physiologist than the present form of Brassica, on account of the multitudinous forms which it has assumed under cultivation. Two plants belonging to the same class can hardly differ more than the flowerless, thick-leaved, swollen Red Cabbage of the gardens, and the tender green herb with yellow flowers of the sea-shore; yet they are one and the same, as is proved by the fact that the Red Cabbages of neglected gardens at the sea-side pass back again in a few generations to the condition of the Wild Cabbage. The cultivated varieties of this plant will be best understood by the following synopsis:—

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* The Plate is E. B. 637, with a pod added from a Kentish specimen by Mr. J. E. Sowerby.

1. *Brassica oleracea sylvestris.*—Wild Cabbage, or Sea Colewort. German, *Der Kohl.* This is the wild form.

2. *B. oleracea acephala.*—Green Kale, or Borecole. Called in France *Choux sans Tête* and *Choux Verts;* in Germany, *Winter Kohl* or *Gemeiner Kohl.* The heads of leaves are always spreading, and according to the degree of this the Germans call the varieties *Blatt Kohl, Rosen Kohl,* and *Schlitz Kohl.* The forms of this variety are very numerous, and are known to English gardeners as the Thousand-headed Cabbage, the Oak-leaved Broccoli, the Green Broccoli, the Scotch Kale, Ragged Jack, Palm Kale, Cow Cabbage, and Ribbed Cabbage. The great distinction of this form is that the leaves do not bend over or connive, as in other varieties.

3. *B. oleracea bulleata* and *B. oleracea gemmifera.*—Savoy Cabbages and Brussels Sprouts. French, *Chou de Savoie;* German, *Kopfkraut.* In this variety the young leaves at first connive and form a head, and the outer leaves are spreading. This garden variety is useful as supplying greens from November till spring. All the forms of what are called Savoys, of which there are a great number, and the Brussels Sprouts, belong to this variety.

4. *B. oleracea capitata.*—Red and White Cabbages. French, *Choux Cabus,* or *Pommés;* German, *Kopfkohl.* The leaves of this variety all connive and are smooth, not crumpled or blistered, as in the preceding varieties. The number of forms of this variety cultivated in our gardens is immense. De Candolle divided them into White and Red Cabbages. The white he subdivided into five sections: 1, with oblong heads; 2, conical heads; 3, large round heads; 4, flat heads; 5, obovate heads. Under each of these heads are several sorts known to the gardeners of Europe. Each of these sorts has its good qualities for size, flavour, growth, or season of maturity. What are called Coleworts are obtained from the seeds of the Cabbage, and the production of this variety depends on the season of planting and management. The Red Cabbage is the *Chou Pommé Rouge* of the French, and the *Rothe Kopfkohl* of the Germans. It is principally used in this country for pickling and for garnish.

5. *B. oleracea caulo-rapa.*—The Turnip-stemmed Cabbage. French, *Chou Rave;* German, *Kohl-Rabe.* In this variety the stem is tumid, and somewhat globose at the origin of the leaves. It looks very like a turnip from the large size of the stem. The leaves are used in the same way as those of greens or coleworts; but unless eaten young they have a disagreeable flavour. This variety and its forms are not so much grown in this country as the other.

6. *B. oleracea Botrytis.*—Cauliflowers and Broccoli. French, *Chou-fleur;* German *Blumenkohl.* The Broccoli is scarcely distinguishable botanically from Cauliflower. The stem of the Broccoli is longer and the flower-heads are smaller. In these cases the parts that are eaten are the over-nourished flowers and stalks. They form a very delicate dish, and their culture has been greatly improved within the last few years in this and other countries of Europe. Cauliflowers are either white or reddish-purple in colour. The Broccoli have a greater variety of colours, being sometimes quite green as well as purple and yellow. A number of forms are reared in the gardens.

From remote antiquity the Cabbage has been cultivated by man for the purpose of food. The Greeks grew it in their gardens, and their poets have perpetuated a rather coarse myth to account for its appearance. They relate that Zeus being called upon to decide between two conflicting oracles, perspired profusely, and the Cabbage sprang from the moisture. The real meaning of this fable may point to the labour and toil required to bring the plant into cultivation. The Romans were in the habit of eating the Cabbage either boiled or raw with vinegar. Pliny relates that in Italy Cabbages of such a size were grown that the table of a poor man would scarcely support one. He adds that as an article of diet they were going out of favour, owing to the quantity of oil necessary to render them palatable, from which we may conclude that they were eaten as a salad. The early sprouts were much esteemed, but, according to Pliny, were rejected by the epicure Apicius and by Drusus, who was reprimanded by his father Tiberius for his fastidious taste. Pliny mentions several kinds of Cabbages, one of which—most probably the Wild Cabbage—was frequently put into casks which had recently contained oil, closely corked, and then sent to a distance, or used on long voyages as a vegetable food. The Cabbage—which name comes from the old French word *cab*, a head—was first grown in Britain by the Saxons, with whom it was a favourite, and perhaps the only garden vegetable they cultivated. It appears that a controversy arose a short time ago regarding the introduction of the Cabbage, some writers contending that it was unknown until the sixteenth century, while others give it a much earlier date. Sir Anthony Ashley, of Wiburg St. Giles, Dorsetshire, has sculptured on his tombstone a Cabbage, to commemorate the circumstance of his having been the first to plant and cultivate this vegetable in England; but this was the Round-headed or Summer Cabbage, and not the old Colewort, which was known long before this time, and mentioned in several monastic records. Gerarde knew several varieties of Cabbage, and in an edition of his "Historie of Plantes," dated 1636, he describes very accurately the different kinds of Cabbages and Cauliflowers, all of which have their origin in the common Cabbage. In 1619 Cauliflowers fetched in the London market the high price of 1*s.* 6*d.* or 2*s.* each. Gerarde says: "The swollen Colewort I received of a worshipful merchant of London, Master Nicholas Lete, who brought the seed thereof out of France." It was a favourite saying of Dr. Johnson, that of all flowers in the garden there was "none to compare to the Cauliflower." In Scotland the introduction of the Cabbage is commonly attributed to the soldiers of Cromwell's army; but in Mr. Johnson's "Useful Plants of Great Britain," a very valuable and reliable book, the notion is contradicted, and an observation made that long before Cromwell's time Kail is mentioned in the old songs and traditions of the country. Kail yards were to be found round Scottish houses long before the Commonwealth; and there was

"Cauld Kail in Aberdeen,
An' castocks in Stra'bogie,"

centuries before the Roundheads crossed the Border. The varieties of the Cabbage are very numerous, and the modes of cultivation equally various. The Cauliflower is simply a Cabbage with its flowering portion more largely developed than in the ordinary plant. It sometimes attains an enormous size, and may perhaps be the specimen spoken of by Pliny for its great dimensions. The Red Cabbage used for pickling seems to have been known to the Romans. The vegetable known in Germany by the name of Kohl-rabi is a variety of Cabbage, the stem of which is alone eaten cut into thin strips and boiled. In the form of Sauer Kraut the Germans consume large quantities of Cabbage: it is prepared by laying the vegetable in layers in a tub with salt and a little oil between each; fermentation takes place, and the mass is not considered in perfection until it is entirely decomposed, giving out to English noses a most unpleasant odour; it is then served up with vinegar, and highly relished by the true German palate. There is but little nutritive matter in Cabbages, as might be imagined, but, in common with most other vegetable food, they form a very important addition to a dietary. The ancients, without knowing their constituents, used them in medicine for a variety of diseases. Pliny recommends gouty people to eat Cabbages entirely, and drink only the water in which they are boiled—advice which might not be without benefit if followed in the present day. Lord Bacon says that raw Coleworts prevent intoxication, and accounts for this property by the fact that there is a natural enmity between the vine and the Cabbage; so much so, "that forthwith the vine perisheth and withereth away if it grow near unto it." Bertolini states that he knew a physician about to settle in Denmark, but on seeing the gardens well stocked with Cabbages, returned, saying it was useless to hope for a lucrative practice among a people so well provided against disease. Our modern chemical researches put us in a better position to judge of the merits of this homely vegetable as an article of diet. We find that one pound of Cabbages contains of water 14 oz. 414 grs.; albumen, 126 grs.; starch, 42 grs.; dextrine, 203 grs.; woody fibre, 35 grs.; mineral matter, 56 grs. In cooking, the latter constituent is in a great measure lost in the water, hence the reasonableness of the advice to drink the water, or else to eat the vegetable uncooked, as was the Roman custom. The table of virtues ascribed to the Colewort by our old and much-believing writer Gerarde includes innumerable diseases and imperfections more amusing than credible. The Cabbage is not so common and homely a vegetable as to have been altogether unheeded in the poet's song. English Dryden says of a housewife,—

> "She took the Coleworts which her husband got
> From his own ground, a small well-watered spot;
> She stripp'd the stalks of all their leaves; the *best*
> She cull'd, and then with handy care she dress'd."

The wild and cultivated varieties of the Cabbage are liable to the attacks of various insects. The larvæ of the Tipula oleracea feed on the roots, whilst those of the Cabbage Butterfly (Pontia Brassicæ) feed on the leaves. The latter are very destructive to the cultivated varieties.

SPECIES VI.—BRASSICA POLYMORPHA.

PLATES LXXXVIII. LXXXIX. XC.

Radical leaves stalked, regularly lyrate; uppermost stem leaves oval or oblong, acuminated, entire, dilated at the base, and amplexicaul; all glaucous, and the upper ones at least glabrous. Inflorescence corymbose or sub-corymbose, or a very compact raceme at the time the flowers expand. Sepals slightly spreading. Beak of the pod conical-subulate, not containing a seed; valves 1-nerved with anastomosing veins.

SUB-SPECIES I.—Brassica Napus. *Linn.*

PLATE LXXXVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XCIII. XCIV. Fig. 4435.

Leaves all glaucous and glabrous. Flowers remaining till the corymb expands into a short raceme.

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* The Plate is E. B. 2146, with a ripe pod added by Mr. J. E. Sowerby.

A weed in cultivated ground, or more frequently the remains of a field of rape or cole seed.

[England, Scotland, Ireland]. Annual or Biennial.
Spring, Summer.

Root slender in the annual or enlarged in the biennial form. Stem erect, branched, 1½ to 2 feet high. Radical leaves lyrate, usually disappearing before the plant flowers; lower stem leaves sub-lyrate or sinuated; the uppermost lanceolate and entire; all dilated and cordate-amplexicaul at the base. Raceme slightly elongated before the flowers expand. Flowers about ⅜ inch in diameter, bright yellow. Calyx slightly spreading. Pods somewhat patent, 2 to 3 inches long, slightly beaded; valves with 1 prominent nerve; beak about ¾ inch long, subulate-angular, without a seed. Whole plant very glaucous and quite smooth.

Rape, Navew, or Coleseed.

French, *Chou Navet.* German, *Der Rüben Kohl.*

This plant is frequently found wild in the fields, though it is so largely cultivated that it may be generally suspected of having escaped from cultivation. The seeds, which contain large quantities of oil, constitute the chief value of this plant. They yield by expression about thirty-three per cent. of oil, which is very valuable for lubricating machinery; it is also used for lighting equally with colza oil, but as it does not dry it is not fit for the painter. As a food for cage birds the Rape seed is well known. All cattle like it, but sheep do not do well if fed largely upon it. Occasionally Rape is grown solely for the purpose of manure, and is then ploughed into the land after the leaves have attained their full size. The cake that remains after the oil is expressed is used both for cattle feeding and as manure. For the latter purpose it is mixed with liquid manure, and is found serviceable to flax crops; it has also been adopted in this country largely as a manure for turnips, and is found to be very successful.

SUB-SPECIES II.—**Brassica campestris.** *Linn.*

PLATE LXXXIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XCII. Fig. 4434.

Leaves all glaucous, the radical ones hispid, the rest glabrous. Flowers falling off before the corymb lengthens into a raceme.

A weed in cultivated ground and by the banks of rivers and ditches. Not uncommon in England, but probably only a straggler in Scotland.

England, [Scotland,] Ireland. Annual or Biennial.
Spring, Summer.

I am unable to distinguish any constant difference between this plant and the last, except that the radical leaves are hispid in B. campestris and glabrous in B. Napus. Sometimes the hairs on the radical leaves are very few and confined to the midrib.

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* The Plate is E. B. 2234, unaltered.

Wild Navew or Navette, Coleseed, Swedish Turnip.

French, *Chou des Champs*, *Navette*.

Although the distinction between the wild species of Brassica are very imperfect, the cultivated forms assume very definite distinctions. The forms of the Brassica campestris recognized by De Candolle and other writers on the forms of cultivated plants are as follow :—

B. campestris oleifera.—The Coleseed, Colsat, or Colza. It has a slender fusiform root and elongated stem.

B. campestris pabularia.—It has a short stem, and is chiefly cultivated for fodder. It is the *Chou à faucher* of the French.

B. campestris Napo-Brassica.—It has a turnip-shaped root, and is the form which yields the Turnip-rooted Cabbage of French agriculture, and the Swedish Turnip of the English farmer.

This species of Brassica is but seldom used otherwise than as fodder for sheep and cattle, although it is regarded by some as a pleasant vegetable for the table when boiled. The Swedish is hardier than the common Turnip, and on some lands is more productive. The root, which is yellow, is sometimes employed to manufacture a fictitious "orange marmalade." The green tops form an excellent vegetable, and large quantities are sold in London for this use, for which they are superior to the common turnip tops. If earthed up in the spring they become blanched, and in that state furnish a substitute for sea-kale. The seed is sold for crushing, or is often crushed by the farmer himself. The Colza, so much grown in France and Belgium as an oil plant, is a variety of this species, though in some parts of France the rape and common cabbage pass under the same name. It is not unlike rape in appearance, and the cultivation is almost precisely the same. Colza has been grown to some extent in Essex and Lincolnshire, but is less in favour with the farmer than the rape, though producing more seed. The chief part of the Colza oil used in this country is imported from abroad, as oil crops are supposed by British farmers to exhaust the land. The great advantage attending the cultivation of this root is that it requires no manure whatever; any soil that is poor and light, especially if it be sandy, suits it, when it seldom exceeds the size of one's thumb or middle finger; in rich manured earth it grows much larger, but it is not so sweet or of so good a quality.

SUB-SPECIES III.—**Brassica Rapa.** *Linn.*

PLATE XC.*

Reich. Ic. Fl. Germ et Helv. Vol. II. *Tetr.* Tab. XCVI. Fig. 4437.

Radical leaves green not glaucous, hispid; stem leaves glaucous and glabrous. Flowers falling off before the corymb lengthens into a raceme.

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* The Plate is E. B. 2176, unaltered.

A straggler in cultivated ground, usually the remains of a field of turnips.

[England, Scotland, Ireland.] Annual or Biennial.
Spring, Summer.

Only to be distinguished from the last by the radical leaves being green instead of glaucous, and a greater number of the stem leaves lyrate-pinnatifid.

I can find no satisfactory characters for separating this plant from B. campestris and B. Napus. All three have both an annual form cultivated for the oily seeds, and also a biennial form yielding an esculent root, though B. Napus is hardly known in this country in the latter state. B. campestris is the only one which can be considered at all well established. The lower leaves in the wild plant of B. campestris are only hispid upon the midrib. The shape of the stem leaves, the direction of the pod, the size of the flower, and the direction of the stamens, which have been considered as affording distinguishing characters, are all inconstant, so that I feel compelled to unite the three under one species, to which I give the name polymorpha in preference to B. campestris, as that name has been applied exclusively to the form with glabrous (not hispid) radical leaves, although I believe that form to be parent of the other two.

The Turnip.

French, *Chou à Feuilles Rudes.* German, *Der Rüben Kohl.*

The Turnip, like the cabbage, is highly susceptible of change under the influence of cultivation. Although the forms assumed by cultivated plants are not recognized by the systematic botanist, they are nevertheless of the highest interest to the vegetable physiologist. In cultivation the Turnip assumes three principal forms. They are as follows :—

B. Rapa depressa.—Round Turnip. French, *Navet ronde*, or *Rave plate ;* German, *Die runde Rübe.* The root is tumid under the neck, globose, depressed, and ending abruptly in a slender tail. The White, Yellow, Black, Red, Green, and Early Dutch Turnips are forms of this variety known to the farmer and gardener.

B. Rapa oblonga.—The Tankard or Decanter Turnip. The root is large and oblong, and white, red, and green forms are cultivated.

B. Rapa oleifera.—The Oil-bearing Turnip. It is the *Navette* of Dauphiny, where it is cultivated for the sake of its seed. It is less productive than the rape or colza, but it grows on less favourable soils.

As an agricultural plant much might be written on the Turnip, and it has formed the subject of many a volume devoted to the progress of modern husbandry, and we find lengthy instructions given as to the mode of sowing, choice of seed, preparation of the soil, and preservation of the crop. Into these particulars we can scarcely enter here, but must refer our readers to such works as Don's "Gardener's Dictionary," or the "Cyclopædia of Agriculture." Under the name of *Navette* the Turnip is cultivated for its seed in the South of France as an oil plant, being considered nearly as productive as colza, and far more hardy. The oil obtained from the seed is sold with that of rape, cabbage, and the true colza, and used for the like purposes. The Turnip is said to have been introduced into Greece and Italy from Gaul. It was well known to the Greeks, and called by them γογγυλη, from γογγυλος, "round," and is mentioned by Theophrastus. By them it was chiefly used in medicine for cataplasms and as an external application. It was eaten, but does not seem to have found much favour as an article of diet. By the Romans it was much esteemed, and we read of Manlius Curius cooking Turnips by the embers of his watch-fire when the Samnite envoys came to offer him the bribe he so contemptuously rejected as worthless in comparison to his broiling roots. Throughout France and Germany the Turnip was undoubtedly cultivated during the Middle Ages, and was most likely brought by the monks and grown in the gardens of England before the Conquest. In the reign of Queen Elizabeth we read of Turnips as a favourite dish; and Gerarde, at a somewhat later date, says: "The smaller Turnip groweth in fields by Hackney in a sandy ground, and is brought to the cross in Cheapside by the women of that village to be sold, and are the best I ever tasted." At this period it would appear that Turnips were grown in large crops, and not confined to garden cultivation as formerly, but it was not until about the year 1730 that they became common objects of field husbandry. Lord Townshend, struck with their extensive cultivation in Germany and Flanders, covered some acres of his own estate in Norfolk with them, and the introduction about the same time of the system of drill husbandry soon caused his example to spread, and it became generally adopted. The chief value of the Turnip as an agricultural plant seems to be the ease with which the crop is secured, and its excellence as a winter fodder for sheep. The Turnips can either be consumed on the ground without removal, which is advantageous, as the animals fatten and manure the land at the same time, or they may be stored in barns for future use. The produce varies greatly : in rich lands in the North of England sixty tons per acre have occasionally been raised; but the amount of crop seldom reaches higher on the best soils of the South than thirty or forty tons per acre. Though forming a valuable food for cattle, and a pleasant vegetable for man's consumption, the Turnip contains but little nutritive matter in proportion to its weight. An analysis of a pound of Turnips is as follows: Water, 14 oz. 213 grs.; albumen and casein, 77 grs.; sugar, 280 grs.; gum, 107 grs.; woody fibre, 168 grs.; mineral matter, 35 grs. Although generally eaten cooked and mashed, Turnips are perfectly wholesome in their raw state, and in that condition were formerly much consumed in Russia by the upper classes. Turnips were part of the farmer's food in Gay's time, for he says,—

"Leek to the Welsh, to Dutchmen butter 's dear,
Of Irish swains potato is the cheer;
Oats for their feasts the Scottish shepherds grind,
Sweet turnips are the food of Blonzalind:
While she loves *Turnips*, butter I despise,
Nor leeks, nor oatmeal, nor potato prize."

Our own true English poet Shakespeare must have been well acquainted with the housing of some such winter stores; for we find "sweet Anne Page," while resisting Master Slender's suit, appealing to her mother thus: "Good mother, do not marry me to yond' fool. Alas! I had rather be set quick i' the earth and bowl'd to death with Turnips." The tops and green leaves of the Turnip form a wholesome and pleasant vegetable at a time of year when but little variety of green food is to be found. In times of scarcity very respectable bread has been made from the Turnip when boiled, pressed dry, and mixed with a portion of wheaten flour. From the quantity of sugar the root contains it is readily made into wine, and a liquor so manufactured is said to be used to adulterate light wines. The juice boiled with sugar is an old domestic remedy for coughs and hoarseness. In old herbalists we have of course numberless benefits ascribed to the use of this favourite vegetable, all of which may with equal justice be expected from the judicious consumption of any fresh vegetable. The Turnip in its wild state gives shelter and nourishment to many kinds of insects. The caterpillars of some kinds of moths and butterflies feed on its leaves, and it is especially exposed during its cultivated growth to the attacks of one of its natural invaders, known by the name of the Turnip-fly. This insect, which is the Haltica Nemorum of entomologists, is a little beetle. It deposits its eggs from April to September, and as they hatch in two days and begin to feed on the leaves of the Turnip, they are a great pest. The larvæ feed within the leaf, whilst the full-grown insect, which has the power of hopping like the flea, feeds on the outside of the leaves. It is in the earlier stages of the growth of the plant that this insect does much havoc, and the rapid and favourable development of the plant is the best remedy against the ravages of this little pest. Besides the insects which attack the leaves, there are others which deposit their eggs in the roots, and these produce the deformities known by the name of "anbury," or "fingers and toes," frequently attributed to the soil. The examination of the root by cutting will, however, in all cases reveal the true nature of these excrescences.

SPECIES VII.—BRASSICA MONENSIS. *Huds.*

PLATES XCI. XCII.

Radical leaves stalked, very deeply pinnatifid, almost pinnate, not lyrate; stem leaves few, similar to the radical ones, but with narrower segments. Sepals quite erect. Beak of the pod cylindrical-subulate, containing 1 to 3 seeds; valves 3-nerved.

SUB-SPECIES I.—Brassica eu-Monensis.

PLATE XCI.*

Brassica Monensis, *Auct. Plur.*
"Sisymbrium Monense, *Linn.* Sp. Pl. ed. i. p. 658." *Sm.* Eng. Bot. 962.

Leaves almost all radical and glabrous. Stem glabrous, nearly simple, almost leafless.

On sandy seashores. Rather local on the west coast of England and Scotland from Glamorganshire to Bute.

England, Scotland. Perennial. Summer.

Rootstock long, woody, branched, producing rosettes of numerous leaves, which are very deeply pinnatifid with distant oblong slightly lobed segments; lobes terminating in a bristle. Stems ascending from a curved base, 6 to 12 inches high, leafless, or with 1 or 2 deeply pinnatifid leaves with strap-shaped segments.

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* The Plate is E. B. 962, unaltered.

Flowers pale yellow, veined, ¾ inch across, in a very short raceme, which lengthens as the fruit ripens. Pedicels about as long as the calyx in flower, shorter than the beak of the pod in fruit. Pods slightly beaded, 2 to 2½ inches in length including the beak, which is from ½ to ¾ inch, and is of the same thickness as the pod at its base where it contains seeds, but terminates in a subulate point where it is empty. Seeds oblong, dark brown, finely punctured. Whole plant very glaucous and glabrous; the stem sometimes with a few hairs.

SUB-SPECIES II.—**Brassica Cheiranthus.** *Vill.*

PLATE XCII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XCI. Fig. 4433.
Sinapis Cheiranthus, *Koch.* Eng. Bot. Sup. 2821, et *Auct. Plur.*

Leaves hispid. Stem hispid, branched, leafy.

On the sandy seashore at St. Aubin's Bay, Jersey, and in Alderney.

Channel Islands. Perennial. Summer.

Extremely like the preceding sub-species, but taller; the stem being from 1 to 3 feet high. The plant is less glaucous and more hispid; and the leaves, instead of being arranged in a rosette, are scattered on the stem.

SUB-GENUS III.—DIPLOTAXIS. *D. C.*

Sepals slightly spreading, often hairy. Seeds ovoid-compressed, arranged in a double row down each cell of the pod.

Diplotaxis, from διπλοος (*diploos*) double, and ταξις (*taxis*), a series; because of the seeds being disposed in two rows in each cell.

SPECIES VIII.—**BRASSICA TENUIFOLIA.** *Bois.*

PLATE XCIII.†

Diplotaxis tenuifolia, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXII. Fig. 4420.
Diplotaxis tenuifolia, *D. C.*, et *Auct. Plur.*
Sisymbrium tenuifolium, *Linn.* *Sm.* Eng. Bot. No. 525.
Sinapis tenuifolia, *Sm.* Eng. Bot. Vol. III. p. 223.

Stem sub-frutescent at the base. Leaves numerous, not in a radical rosette, the lower ones pinnatifid. Pedicels longer than the flowers when fully open.

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* The Plate is E. B. S. 2821, unaltered.

† The Plate is E. B. 525, with a pod added by Mr. J. E. Sowerby.

By roadsides and on old walls. Rather rare, but probably wild in the South of England. In Scotland, where Fifeshire is its northern limit, there is little doubt that it is an introduced plant, as, although it occurs in great abundance at St. David's, on the Frith of Forth, it is only found on the ballast hills.

England, [Scotland,] Ireland. Perennial. Summer, Autumn.

Rootstock woody, producing numerous branched stems 18 inches to 3 feet high, which are somewhat woody at the base. Leaves crowded on the stem, pinnatifid, with few distant oblong or strap-shaped ascending lobes; the upper ones elliptical-strapshaped, often nearly or quite entire. Peduncles long, terminating the stem and branches. Flowers $\frac{3}{4}$ inch in diameter, pale yellow, in a corymb, which afterwards lengthens into a lax raceme. Sepals oval, glabrous, or hairy only at the apex, always shorter than the pedicels, and sometimes not half their length. Petals more than twice as long as the calyx, roundish, contracted into a narrow claw about one-third the length of the lamina. Fruit pedicels nearly as long as the pods, which are 1 to $1\frac{1}{4}$ inch long, broadly linear, attenuated at each end, tipped by the cylindrical style, which is about $\frac{1}{8}$ inch long. Whole plant glabrous and glaucous, growing in bushy tufts. Occasionally the stem is hispid.

Fine-leaved or Narrow-leaved Wall Mustard or Wall Rocket.

French, *Diplotaxe à Feuilles Menues.* German, *Doppelsame.*

SPECIES IX.—BRASSICA BREVIPES.

PLATES XCIV. XCV.

Stem very rarely at all woody at the base, generally very short. Leaves chiefly in a radical rosette, pinnatifid, or pinnatifid-lyrate. Pedicels equal to or shorter than the flowers when fully open.

SUB-SPECIES I.—Brassica muralis. *Bois.*

PLATE XCIV.*

Diplotaxis muralis, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXII. Fig. 4417.
Diplotaxis muralis, *Auct. Plur.*
Sisymbrium murale, *Linn.* *Sm.* Eng. Bot. No. 1090

Leaves chiefly radical. Stem with few leaves. Pedicels about as long as the fully expanded flowers. Petals twice or thrice as long as the sepals, roundish, abruptly contracted into a narrow claw. Style not narrowed towards the base.

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* The Plate is E. B. 1090, and represents the variety β, Babingtonii.

Var. *α*, *genuina*.

Stem naked, or with 1 or 2 leaves near the base. Root always annual.

Var. *β*, *Babingtonii*.

Stem leafy, sometimes slightly woody at the base. Root occasionally biennial or even perennial?

On roadsides and sandy waste places. Common in the South of England. In Scotland it is confined to the neighbourhood of the ballast hills at Charlestown in Fifeshire.

England, [Scotland,] Ireland. Annual, Biennial, or Perennial?
Summer. Autumn.

Stem subdividing into several close to the ground, at which point the leaves are crowded together, very few being situated on the stems above the place where the latter separate, in variety *α*; in variety *β*, however, where the branching is not confined to the base, the stems are often leafy for 6 or 8 inches of their length in luxuriant specimens. Leaves pinnatifid, but with the segments shorter, more triangular, and closer together than in B. tenuifolia, and with the lobes more often irregularly toothed; the terminal segment is also usually larger than in that species, so that sometimes the leaves become imperfectly lyrate. The flowers are rather smaller, and the sepals oblong, generally with a few hairs towards the tip. The peduncles are always shorter than the pods, which are more spreading than in B. tenuifolia.

The variety *β*, which is noticed by Professor Babington (Man. ed. v. p. 29), closely resembles B. tenuifolia in habit, and I have seen specimens of it to which that name had been affixed; but the much shorter pedicels form a character by which they may be readily separated. The stem too is more hispid towards the base. The leaves in B. muralis are very frequently sinuated, that is, they appear to have portions scolloped out, while in B. muralis the lobes generally project beyond the general outline of the leaf, but this is by no means always the case. Varieties *α* and *β* appear to pass too gradually into each other to allow me to consider them as sub-species.

Wall or Sand Mustard.

French, *Diplotaxe des Murs.*

SUB-SPECIES II.—**Brassica viminea.** *Bois.*

PLATE XCV.*

Diplotaxis viminea, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXXII. Fig. 4416.
Diplotaxis viminea, *D. C.* et *Auct. Plur.*
Sisymbrium vimineum, *Linn.* Sp. Pl. 919.

Leaves all radical; scapes leafless. Pedicels shorter than the fully expanded flowers. Petals not twice the length of the sepals, obovate, insensibly attenuated into a claw. Style slightly narrowed towards the base.

Waste places at St. Peter's Port, Guernsey (Rev. W. W. Newbould).

Channel Islands. Annual. Summer, Autumn.

Extremely like the variety α of Brassica muralis, but smaller, and producing leafless scapes from a rosette of radical leaves, which are generally less deeply divided and have short broadly-triangular segments, with the terminal one larger. The principal difference, however, lies in the petals, which are much shorter and narrower in proportion than in B. muralis, from which it appears to me to be only separable as a sub-species. As, however, muralis and viminea, have had distinctive specific names since the time of Linnæus, I have not ventured to use either of these for the super-species, and have therefore called it "brevipes," from the shortness of the pedicel, the distinctive character between it and B. tenuifolia. I have not seen Mr. Newbould's specimens of B. viminea.

Small Sand Rocket.

TRIBE V.—SISYMBRIEÆ.

Cotyledons flat, with the radicle lying on the back of one of them (incumbent). Pod elongate, 2-valved.

GENUS V.—SISYMBRIUM. *Linn.*

Sepals equal at the base, or the lateral ones slightly gibbous. Petals equal, entire, usually elongate, and with long claws. Filaments without wings or teeth. Pod linear-elongate, sub-cylindrical, terete or compressed; valves 3-nerved, the lateral ones sometimes indistinct. Stigma sub-sessile, disciform, slightly 2-lobed or emarginate with a thickened margin. Seeds usually numerous, ovoid or oblong, without a margin.

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* The Plate is drawn from a dried French specimen by Mr. J. E. Sowerby.

Herbs, chiefly annual and biennial, with rather small flowers, most commonly yellowish, disposed in corymbs, lengthening into lax racemes, or more rarely in the axils of the leaves.

French, *Sisymbre.* German, *Ranke.*

The generic name is derived from σισιβος (*sisibos*), a fringe, as some of the species have fringed roots. The same name was also applied by Ovid to some aquatic plant, which he advises should form part of a nosegay to be presented to Venus.

SUB-GENUS I.—EU-SISYMBRIUM.

Seed-stalk (funiculus) filiform.

SPECIES I.—SISYMBRIUM OFFICINALE. *Scop.*

PLATE XCVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXII. Fig. 4401.
Erysimum officinale, *Linn.* *Sm.* Eng. Bot. No. 735.
Chamæplium officinale, *Wallr.* Sched. Crit. p. 577.

Leaves pinnatifid, sub-lyrate, with oblong segments. Pods sub-sessile, straight, subulate, adpressed, arranged in lax leafless racemes terminating the stem and branches.

In hedgebanks, by roadsides, and in waste places and fields. Very common throughout Britain, where it appears to be absent from the Shetland Islands only.

England, Scotland, Ireland. Biennial or Annual. Summer.

Stem erect, 1 to 3 feet high, with spreading branches on the upper part. Radical leaves in a rosette, very deeply pinnatipartite, with 4 or 5 spreading lobes on each side of the midrib and a large one at the apex which is nearly semicircular or triangular and often again divided into 3; all the lobes more or less angulated or toothed; stem leaves runcinate-pinnatifid, with a few pairs of oblong toothed lobes and a long hastate terminal one. Pedicels extremely short. Flowers about ⅛ inch across, pale ochreous yellow. Pods hairy, about ½ inch long, gradually tapering from the base to the point, not beaded; valves 3-nerved; replum transparent, without a nerve. Plant dull green, with scattered hairs.

This plant is very readily recognised by its peculiar habit, the pods being closely pressed to the stem and arranged in racemes which are almost spikes, of which the terminal one is the longest and erect; the lateral ones almost horizontal at the base, but curving upwards at the apex, and the uppermost spikes longer than the lower ones.

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* The Plate is E. B. 735, unaltered.

Hedge Mustard.

French, *Sisymbre Officinal, Herbe au Chantre.* German, *Hederich, Wegesenf, Wildersenf.*

The common name is derived from its pungent, warm taste, and more particularly from the bitterish heat of its small seeds. Birds are fond of these seeds, which they eat greedily. The whole plant has been used in medicine, and has even a reputation to this day as a remedy in coughs, hoarseness, and asthma; hence the French popular name. Rondeletius informs us that a hoarseness occasioned by loud speaking was cured in three days by the use of this plant. Dr. Cullen recommends the juice to be mixed with honey or sugar and taken for this purpose. Gerarde advises those afflicted with sciatica to take it in like manner; and Galen says "it is of a fiery temperature, and doth thereby attenuate, melt, and make thin, which is the reason of its reputation in discussing rheum." Withering quotes an old MS. which says, "Juice of Hedge Mustard is beyond anything in ulcers of the throat. This was found by experience by the Hon. Harry Gray when all advice of doctors and surgeons availed nothing. This from his own mouth."

SPECIES II.—SISYMBRIUM POLYCERATIUM. *Linn.*

PLATE XCVII.[*]

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXIII. Fig. 4405.
Chamæplium polyceratium, *Wallr.* Sched. Crit.

Leaves pinnatifid with triangular segments, or the upper ones only dentate. Pods sub-sessile, curved, subulate-cylindrical, spreading 2 or 3 together from the axils of the leaves, or more rarely solitary.

At the bottom of walls at Bury St. Edmunds, Suffolk. Sown by the late Dr. Goodenough, but it still exists in this locality.

[England]. Annual. Summer.

Stem branched from the base only; central branches patent-ascending; lateral branches decumbent. Leaves numerous, stalked, clothing the branches quite to the apex, pinnatifid with a few large triangular acuminated spreading lobes; the terminal lobe irregularly rhomboidal, hastate, and slightly dentate. Pedicel sextremely short. Flowers about $\frac{1}{12}$ inch across, pale ochreous yellow. Pods slightly hairy, about $\frac{3}{4}$ inch long, curved outwards, narrowing very gradually from the base, slightly beaded; valves 3-nerved; replum thick and spongy, without a nerve; whole plant dull green, subglabrous.

Many-podded Hedge Mustard.

French, *Sisymbre Corniculé.* German, *Die Ranke.*

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[*] The drawing has been made for this work by Mr. J. E. Sowerby from a dried specimen from Bury St. Edmunds.

SPECIES III.—**SISYMBRIUM SOPHIA.** *Linn.*

PLATE XCVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXIV. Fig. 4405.

Leaves twice or thrice pinnatifid, with linear or strap-shaped segments. Pods on long stalks, slightly curved, sub-compressed-cylindrical, patent-ascending, arranged in lax leafless racemes terminating the stem and branches.

On roadsides, waste places, and rubbish heaps. Rather scarce, but generally distributed throughout England and the whole of Scotland, except the extreme north.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stem erect, 1 to 3 feet high, with patent-ascending branches in the upper portion only. Leaves very numerous, twice or thrice pinnately partite, with short strap-shaped lobes. Flowers about ⅛ inch across, pale yellow. Fruit pedicels nearly ½ inch long. Pods smooth, from ½ to ¾ inch long, slightly curved inwards, scarcely tapering, and slightly beaded; valves with 1 conspicuous nerve; replum membranous, with a nerve down the middle. Plant greyish green, more or less thickly covered with extremely short, simple, or star-like hairs.

The finely divided decompound leaves of this plant distinguish it from all the other British siliquose Cruciferæ.

Fine-leaved Hedge Mustard, Flix Weed.

French, *Sisymbre Sophie, Sagesse des Chirurgiens.*

This plant has a sort of reputation in old herbals as an astringent medicine. The force of gunpowder is said to be increased by an admixture of its seeds, and as a vermifuge they are celebrated by old authors. We give but little credence to any of its virtues.

SPECIES IV.—**SISYMBRIUM IRIO.** *Linn.*

PLATE XCIX.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXXV. Fig. 4408.

Leaves pinnatifid with oblong segments. Pods stalked, scarcely curved, cylindrical, patent-ascending, arranged in leafless racemes terminating the stem and branches.

On old walls and in waste places. Rare. At Berwick-upon-Tweed, where I believe it still grows. It has also occurred near London, in Essex, Cambridgeshire, Oxfordshire, and Buckinghamshire; but there is no recent authority for these latter places. It is said to have been particularly abundant on the ruins left by the Great Fire of London, but the only specimens I have seen are from Berwick-upon-Tweed.

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* The Plate is E. B. 963, unaltered.

† The Plate E. B. 1631, unaltered.

England, Scotland, Ireland. Annual or Biennial. Summer.

Stem erect, 1 to 2 feet high, branched. Leaves stalked, deeply pinnatifid or pinnatipartite with distant spreading or even reflexed lobes which are slightly toothed; terminal lobe a little larger than the rest, especially in the upper leaves where it is usually hastate. Flowers about $\frac{1}{8}$ inch in diameter (considerably smaller than as represented in the Plate), pale ochreous yellow. Fruit pedicels ascending, $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Young pods much exceeding the flowers; mature pods $1\frac{1}{2}$ to $1\frac{3}{4}$ inch long, smooth, very slender, scarcely tapering, distinctly beaded; valves with 3 distinct nerves; replum membranous, without a nerve. Plant dull green, glabrous, or slightly pubescent.

The much longer and slenderer pods distinguish this from all the preceding species of the genus.

London Rocket, or Broad-leaved Hedge Mustard.

French, *Sisymbre Irio.*

This name is derived from ερυω (*eruo*), I cure. It is called London Rocket, from the fact of its having sprung up in great quantities on the ground which was laid waste by the Great Fire of London in 1666.

SUB-GENUS II.—ALLIARIA.

Seed-stalk (funiculus) dilated.

SPECIES V.—**SISYMBRIUM ALLIARIA.** *Scop.*

PLATE C.*

Alliaria officinalis, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LX. Fig. 4379.
Alliaria officinalis, *Andrz.* in *D. C.* *Bab.* Man. Brit. Bot. ed. v. p. 27. *Benth.* Handbook Brit. Fl. p. 88. *Hook. & Arn.* Brit. Fl. ed. viii. p. 35.
Erysimum Alliaria, *Linn.* *Sm.* Eng. Bot. No. 796.

Leaves rounded or deltoid, base deeply cordate, edges crenate or toothed. Pods shortly stalked, nearly straight, cylindrical but somewhat 4-angled, ascending-spreading, arranged in very lax leafless racemes terminating the stem and branches.

In hedges and open places in woods. Common in England and the South of Scotland, but becoming rare in the North and

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* The Plate is E. B. 796, unaltered.

West, where, so far as is known, Ross-shire is the most northerly county in which it has been found.

England, Scotland, Ireland. Biennial. Spring and Early Summer.

Stem commonly curved where it leaves the ground and then erect, 18 inches to 4 feet high. Root leaves on very long stalks, the lamina often 3 or 4 inches in diameter, roundish, very deeply cordate, with crenate or repand edges; stem leaves smaller and on shorter stalks, deltoid-ovate, often acuminate, base cordate, edges crenate-dentate, or in the uppermost leaves dentate. Flowers about ¼ inch in diameter, pure white. Fruit pedicels about ¼ inch long. Pods smooth, 1½ to 2 inches long, scarcely curved, not tapering, beaded; valves with 1 very prominent nerve, on each side of which there is a faint one close to the suture; replum transparent, without a nerve. Plant dull green, glabrous, and shining.

This plant is usually placed in a separate genus, Alliaria. The principal characters employed to separate it from Sisymbrium are that the seed-stalk is widened, so as to be ribandlike instead of threadlike, as is the case in the other species of the genus Sisymbrium. The great prominence of the middle nerve of each valve of the pod gives the latter a 4-sided appearance, which has led to its being placed in the genus Erysimum; but the pod is more cylindrical and the calyx less erect than in the species of that genus.

Garlic Hedge Mustard, Jack-by-the-Hedge, or Sauce Alone.

French, *Sisymbre Alliare.* German, *Das Knoblauchkraut.*

The specific name is derived from *allium*, garlic, on account of the strong smell of garlic emitted by the plant. It was formerly used by the country people in sauces, with bread and butter, salted meat, and in salads,—hence one of its common names Sauce Alone; and from growing by hedgesides it is called Jack-by-the-Hedge. It is occasionally used as a salad, or boiled as a pot-herb. Horses, sheep, and swine refuse it, but cows and goats eat it. If eaten by cows it gives a strong disagreeable flavour to the milk. When it grows in poultry yards fowls eat it, and it gives a rank, unpleasant taste to their flesh. The seeds excite sneezing. In common with nearly all plants of this order, it had a reputation for medicinal virtues in olden times.

GENUS VI.—**ERYSIMUM.** *Linn.*

Sepals erect, equal at the base, or the lateral ones slightly gibbous. Petals equal, entire, elongate, and with long claws. Filaments without wings or teeth. Pod linear-elongate, sub-cylindrical, 4-sided; valves keeled, with a strong dorsal nerve, and sometimes 2 other less conspicuous lateral ones. Stigma sub-sessile, or raised upon a cylindrical style, disciform, slightly 2-lobed, or emarginate, with a thickened margin. Seeds ovoid or oblong, without a wing (rarely margined at the apex).

Annual or biennial plants, more rarely perennial, often clothed with starlike pubescence. Leaves entire, toothed or sinuated; the lower ones attenuated into a petiole; the stem leaves sessile. Flowers small or moderately large, usually yellow, disposed in corymbs, which afterwards lengthen into lax racemes.

French, *Vélar*. German, *Hederich*.

This generic name is derived from ερυω (*eruo*), I draw, or I cure, on account of its supposed salutary effects in medicine, many of which are still believed in.

SUB-GENUS I.—CONRINGIA. *D. C.*

Petals with the limb erect. Stem leaves with the base cordate-amplexicaul. Plants glabrous and glaucous.

SPECIES I.—**ERYSIMUM ORIENTALE.** *R. Brown.*

PLATE CI.*

Conringia orientalis, *Reich.* Ic. Fl. Germ et Helv. Vol. II. *Tetr.* Tab. LXI. Fig. 4382.
Brassica orientalis, *Linn.* *Sm.* Eng. Bot. No. 1804.
Brassica perfoliata, *Lamarck*, Dict. Vol. I. p. 748.
Erysimum perfoliatum, *Crantz.* *Gr. & Godr.* Fl. de. Fr. Vol. I. p. 90.

Stem leaves oval-oblong, cordate-amplexicaul, entire. Pods spreading; valves with 1 nerve. Pedicels about one-sixth or one-eighth the length of the pod.

In fields and on cliffs near the sea, but apparently not permanently naturalized. Reported, on old authority, from the cliffs near Harwich, as also at Bawdsey, near Orford, Suffolk (Dale). In fields near Godstone and Marshfield, Sussex (Huds.); and more recently the Rev. J. S. Tozer states that it came up spontaneously in a field that had been ploughed to form a garden in the centre of the new square at Plymouth.

[England, Ireland]. Annual. Summer.

Stem erect, 8 inches to 2 feet high, simple or slightly branched. Lowest leaves obovate, gradually attenuated to the base; stem leaves elliptical, blunt, clasping the stem by 2 rounded auricles. Flowers about $\frac{1}{4}$ inch across, cream-coloured. Fruit pedicels about $\frac{1}{3}$ inch long. Pods 3 to 4 inches long, quadrangular, slightly beaded, and each valve with a very prominent nerve; replum spongy. Whole plant quite glabrous and glaucous.

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* The Plate is E. B. 1804, unaltered.

This plant has much the habit of the genus Brassica, in which it was placed by Linnæus.

Hare's Ear Cabbage, or Hedge Mustard.

SUB-GENUS II.—EU-ERYSIMUM.

Petals with the limb spreading. Stem leaves not amplexicaul. Plant clothed with starlike hairs.

SPECIES II.—ERYSIMUM CHEIRANTHOIDES. *Linn.*

PLATE CII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LXIII. Fig. 4383.

Stem leaves lanceolate-elliptical, attenuated at the base, and not at all amplexicaul. Petals with the claw about as long as the sepals. Pods ascending-spreading; valves with 1 nerve; pedicels nearly half as long as the pod.

A weed in cultivated ground and in waste places. Not uncommon in the South of England, particularly in the neighbourhood of London, but only occurring as a straggler in the northern counties and in Scotland.

England, [Scotland,] Ireland. Annual. Summer, Autumn.

Stem erect, 6 inches to 3 feet high; the larger examples with patent-ascending branches in the upper portion of the stem. Radical leaves at first in a rosette, but withering before the flowers open; leaves spreading, all narrowed at the base, and the lower ones occasionally shortly stalked, the edges waved or remotely dentate. Flowers about $\frac{1}{6}$ inch across, bright yellow. Fruit pedicels about $\frac{1}{2}$ inch long, patent. Pods $\frac{3}{4}$ to 1 inch long, slightly curved, slender, indistinctly beaded, quadrangular, forming an obtuse angle with the pedicel, so that they are less spreading than the latter; replum membranous. Whole plant dull green, covered with scattered starlike hairs, with usually 3 rays.

Treacle Hedge Mustard, Wormseed Mustard, or Wallflower Mustard.

French, *Vélar, Giroflée.*

The seeds of this plant were at one time given to children as a vermifuge, and are said to have been very efficacious. The plant formed an ingredient in the so-called Venice treacle and many quack and rustic medicines.

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* The Plate is E. B. 942, unaltered.

GENUS VII.—**HESPERIS.** *Linn.*

Sepals erect, the lateral ones gibbous at the base. Petals equal, entire, with long claws and spreading laminæ. Filaments without wings or teeth. Pod linear-cylindrical, slightly compressed; valves with a single nerve. Stigma sub-sessile, cleft into 2 oblong obtuse erect contiguous lobes. Seeds oblong, angular, often winged at the top.

Erect biennial or perennial herbs, clothed with simple or forked hairs. Stem leaves ovate or oblong, entire, toothed or lyrate. Flowers rather large, variously coloured, disposed in short racemes, which afterwards become more lax.

Hesperis, from ἕσπερος (*hesperos*), the evening, because the flowers of most of the species are sweet-scented in the evening.

SPECIES I.—**HESPERIS MATRONALIS.** *Linn.*

PLATE CIII.[*]

H. matronalis and H. inodora, *Linn.* *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LIX. Figs. 4377, 4378.
H. inodora, *Linn.* *Sm.* Eng. Bot. No. 731.

Leaves ovate-lanceolate, acuminate, dentate. Pedicels about as long as the calyx. Petals obovate. Pods spreading, cylindrical, beaded.

In meadows, thickets, and roadsides, but only as a straggler from cultivation, and apparently not perfectly naturalized in any of its localities, which are rather numerous both in England and Scotland.

[England, Scotland, Ireland]. Perennial or Biennial. Summer.

Rootstock somewhat woody, producing 1 or more stems, which are erect, from 18 inches to 3 feet high, and in large examples branched at the summit. Lower leaves obovate or oblanceolate, gradually attenuated into a short stalk; upper leaves ovate-lanceolate or lanceolate, shortly stalked, and the uppermost ones quite sessile, the margins of all rather finely denticulate. Flowers about ¾ inch across, pale lilac or white, in a raceme 2 to 4 inches long, which, as usual, lengthens very much in fruit. Fruit pedicels ⅓ to ¾ inch long, spreading. Pods nearly glabrous, 2½ to 3½ inches long, narrowly cylindrical, attenuated at both ends, remotely beaded. Plant dull green, more or less clothed with short stiff simple hairs, and on the stem there are also smaller and more numerous starlike ones.

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[*] The Plate is E. B. 731, unaltered.

Dame's Rocket, Dame's Violet, Queen's Gilliflower, and (according to Gerarde) *Damask Violets.*

French, *Julienne des Dames.* German, *Die Gemeine Nachtviole.*

The specific name signifies mother, the Mother of the Evening, at which hour the blossoms exhale a pleasant perfume, which is not appreciable in the daytime. This pretty plant is known only for its attractive appearance and sweet scent, and is consequently but little noticed by writers, excepting such as deal in poetical fancies. We find its praises sung thus :—

> "Rich and profuse the breath you send
> Through air, though none are nigh ;
> Oh ! 'tis the incense from the earth,
> Your tribute sent on high.
> Emblems are you, night-scenting flowers,
> Of hope to sorrow given ;
> Strongest through tearful, darkling hours
> Are breathings unto Heaven."

TRIBE VI.—ARABIDEÆ.

Cotyledons flat, with the radicle lying along their edges on one side (accumbent). Pod elongate, 2-valved.

GENUS VIII.—MATTHIOLA. *R. Brown.*

Sepals erect, the lateral ones gibbous at the base. Petals equal, entire, with long claws and spreading laminæ. Filaments without wings or teeth. Pod elongate-cylindrical or cylindrical-compressed; valves with a dorsal nerve. Style short, conical. Stigma cleft into 2 oblong obtuse erect contiguous lobes, often thickened or produced into horns on the outer side. Replum thick, scarcely transparent. Seeds orbicular or oval, compressed, often winged round the margin.

Herbs or undershrubs, thickly clothed with stellate down. Leaves oblanceolate, elliptical-oblong or linear, entire, toothed or sinuated. Flowers large, usually purple, disposed in short racemes, which afterwards elongate.

Stock.

French, *Matthiole.* German, *Zwerglevkoje.*

This genus of plants was named in honour of Peter Andrew Matthioli, an Italian physician, who died in 1577. He was physician to Ferdinand of Austria, and author of a commentary upon the works of Dioscorides.

SPECIES I.—MATTHIOLA SINUATA. *R. Brown.*

PLATE CIV.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLV. Fig. 4350.
Cheiranthus sinnatus, *Linn.* *Sm.* Eng. Bot. No. 462.

Stem herbaceous. Lower leaves usually toothed, or pinnatifid with projecting lobes. Pods cylindrical-compressed, dotted with glands. Stigmatic lobes thickened on the outside, and projecting laterally into a tooth. Seeds roundish-oval, with the wing less than half the diameter of the cotyledons.

On sandy seashores. Rare. It occurs on the coasts of Cornwall, Devon, Glamorgan, Pembroke, Merioneth, Carnarvon, Anglesea, and Flint. Very common in the Channel Islands.

England, Ireland. Biennial. Summer.

Stem 9 inches to 2 feet high, slightly branched at the upper part. Root leaves in a radical rosette, strap-shaped, attenuated at the base, with a few projecting teeth or lobes; stem leaves narrowly elliptical, the uppermost usually quite entire. Flowering raceme 1 to 3 inches long. Flowers nearly 1 inch across, pale lilac, turning pink or rose-colour when dried. Fruit pedicels about ½ inch long. Pods about 4 inches in length; replum translucent, with 2 nerves. Seeds longer than broad, very much compressed, surrounded by a membranous wing broadest at the top, where it is about one-third the diameter of the solid part of the seed. Whole plant hoary, the stem, leaves, pedicels, calices, and pods being thickly covered with a felt of white stellate hairs, amongst which small glands are interspersed.

Sea Stock.

French, *Matthiole Sinuée.*

The plant has an alkaline bitter taste. The flowers give out a pleasant perfume in the evening, and from its hardy, handsome appearance, it forms a very desirable decoration for the gardens and boundaries of marine residences.

SPECIES II.—MATTHIOLA INCANA. *R. Brown.*

PLATE CV.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLV. Fig. 4354.
Cheiranthus incana, *Linn.* *Sm.* Eng. Bot. No. 1935.

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* The Plate is E. B. 462, with seed added by Mr. J. E. Sowerby.

† The Plate is from a new drawing by Mr. J. E. Sowerby, made from a dried specimen from the Isle of Wight.

Stem woody at the base. Leaves all entire. Pods cylindrical, compressed, without glands. Stigmatic lobes thickened on the outside, and projecting laterally into a tooth. Seeds circular, with the wing more than half the diameter of the cotyledons.

On cliffs by the sea-coast, very local, and possibly an introduced plant. Plentiful on the bare perpendicular face of the chalk cliffs at Freshwater Bay, Isle of Wight, and also on sandy rocks by the shore at Steep Hill, near Ventnor. It is said to have occurred formerly on the cliffs to the east of Hastings, but is not now found there.

England. Perennial. Spring to Autumn.

Stem erect, woody, and in old plants often exceeding 1 inch in diameter, dividing near the ground into numerous ascending branches which are again branched, forming a bush 1 or 2 feet high, the branches naked and marked with leaf-scars except at the extremity. Leaves in rosettes at the extremity of the old branches, and scattered on the shoots of the year; the lower ones narrowly oblanceolate or elliptical-strapshaped, entire or sometimes with faint obtuse-angled projections at the sides. Flowering raceme 1 to 2 inches long. Flowers "1 to 1¾ inch in diameter, purplish pink, varying to violet-blue or lilac on the same plant" (Dr. Bromfield), bright rose-colour when dried. Fruit pedicels about ½ inch long. Pods 4 or 5 inches in length, and about ⅕ inch broad; replum translucent, with 2 or 3 nerves. Seeds nearly orbicular, much compressed, surrounded by a white membranous wing broadest at the top, where it is nearly two-thirds the diameter of the solid part of the seed. Whole plant covered, as in the last species, with hoary stellate pubescence, but without interspersed glands.

Hoary Shrubby Stock.

French, *Matthiole Blanchâtre.* German, *Die Weissgraue Winterlevkoje.*

The specific name of this plant indicates its downy appearance, or, as Lord Bacon says, its "velvet rind." By cultivation this species becomes the Queen's Stock, rivalling in size and beauty the celebrated Brompton Stock.

GENUS IX.—CHEIRANTHUS. *Linn.*

Sepals erect, the lateral ones gibbous at the base. Petals equal, entire, with long claws and spreading laminæ. Filaments without wings or teeth. Pod elongate, quadrangular, more or less compressed; valves keeled, with a dorsal nerve. Style short, conical, or filiform. Stigma with 2 diverging sub-cylindrical lobes with round tops. Replum transparent. Seeds oval-compressed, often winged round the margin.

Herbs or undershrubs with scattered adpressed hairs, rarely with stellate down. Leaves elliptical-oblong or linear, entire or toothed. Flowers large, yellow or purple, disposed in short racemes which afterwards elongate.

Wallflower.

French, *Giroflée.* German, *Der Lack.*

The derivation of the name of this genus is variously given. That most generally received is from χειρ (*cheir*). the hand, and ανθος (*anthos*), a flower,—a *hand-flower*, because suited for carrying in the hand. This appears to us so absurd and so little applicable to this plant in particular, that we prefer taking the Arabic word *cheiri* or *kheyry*, the name of a very red sweet-scented flower, as the origin of the generic name Cheiranthus. The species frequently grow on walls, hence the popular name.

SPECIES I.—CHEIRANTHUS CHEIRI. *Linn.*

PLATE CVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLV. Fig. 4347.
Cheiranthus fruticulosus, *Linn.* *Sm.* Eng. Bot. No. 1934.

Stem woody at the base. Leaves entire. Pod quadrangular-compressed. Style conical. Seeds winged at the summit.

On old buildings and walls, not truly native, though occurring in the greater number of the English and Scotch counties.

[England, Scotland, Ireland]. Perennial. Spring.

Stem erect, 9 inches to 2 feet high, the old part woody, marked with leaf-scars, and bare of leaves except at the summit where they are arranged in tufts, and are also scattered on the branches of the year. Leaves narrowly oblanceolate or elliptical-strapshaped, quite entire. Flowering raceme very short. Sepals purplish. Flowers ¾ inch to 1 inch across, bright orange-yellow, rarely tinged with the dark brown so common in the garden form of this plant. Fruit pedicels about ½ inch long. Pods 1½ to 2½ inches long by ⅓ inch broad, suddenly contracted at the apex into an extremely short conical style; valves notched at the summit; replum with a central nerve. Seeds oblong, winged only at the apex. Plant dull green, clothed with short adpressed bipartite hairs resembling a simple hair attached by the middle.

Common Wallflower, Gilliflower.

French, *Giroflée Violier*, *Violier Jaune.* German, *Lackviole*, *Goldlack*, or *Gelbnelke.*

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* The Plate is E. B. 1934, with a pod added by Mr. J. E. Sowerby.

The name Gilliflower, or Yellow Flower, is in allusion to its colour, and not, as some say, to July, in which month it is beginning to fade away, and it is by no means in perfection. In the poorest and commonest gardens this well-known plant is a favourite, and its bright blossoms and delightful scent render it welcome alike in the cottage and the mansion. Many varieties are produced by cultivation from the original plant, the native of our old walls, rocks, and roofs. The flowers vary in size from single to double, from yellow to rusty and blood-coloured, or variegated with the same colours. None are, however, more fragrant than the wild plant, to which Sir Walter Scott alludes in describing the early days of a child :—

"And well the lonely infant knew
Recesses where the Wallflower grew.
I deem'd such nooks the sweetest shade
The sun in all his round surveyed."

And again :—

"The rude stone fence with fragrant Wallflowers gay,
To me more pleasure yields
Than all the pomp imperial domes display."

It is the Wallflower which Burns introduces into the scenery of a vision of former times :—

"As I stood by yon roofless tower,
Where Wallflow'r scents the dewy air,
And owlet roams in ivy bower,
Telling the midnight moon her care."

Poets have given personality to this favourite flower; and Herrick, who is scarcely inferior to the older classical poets in his pictures of love-lorn swains and adventurous maidens, ascribes the origin and very name of this flower to the spirit of a fair young damsel, long detained in durance vile, who braving all perils to steal an interview with her lover,—

"Up she got upon a wall,
'Tempting down to slide withal;
But the silken twist untied,
So she fell, and bruised, and died.
Love, in pity of the deed,
And her loving, luckless speed,
Turned her to this plant we call
Now the *flower of the wall.*"

The Wallflower is not without reputation as a medicine. Hill the naturalist says: "An infusion of Wallflower is good against the headache and nervous disorders. They are good to steep in oil, to which they give a cordial warmth, and which is good against pains in the limbs."

GENUS X.—CARDAMINE. *Linn.*

Sepals slightly spreading, equal at the base. Petals equal, entire, with long claws. Filaments without wings or teeth. Pod linear, cylindrical or tapering, compressed; valves without conspicuous nerves, opening suddenly with a spring, and rolling backwards from the base. Style conical, sometimes very short. Stigma entire or slightly 2-lobed. Replum transparent. Seeds compressed, not winged.

Perennial or annual herbs, often glabrous. Leaves pinnate or simple, alternate, sometimes opposite or in whorls of 3. Flowers purplish or white, disposed in corymbs or short racemes which afterwards elongate.

French, *Cardamine.* German, *Schaumkraut.*

The name is derived from καρδια (*kardia*), the heart, and δαμαω (*damao*), to subdue, in allusion to the stomachic qualities of the species.

SUB-GENUS I.—DENTARIA.

Pod tapering from near the base to the apex. Seed stalk (funiculus) dilated Cotyledons with the margins involute.

Herbs with scaly rhizomes and pinnate or digitate leaves, sometimes in a whorl of 3.

SPECIES I.—CARDAMINE BULBIFERA.

PLATE CVII.*

Dentaria bulbifera, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXXI. Fig. 4318.
Dentaria bulbifera, *Auct. Plur.*

Rootstock creeping, scaly. Leaves pinnate, with 5 to 7 elliptical, crenate-serrate or entire leaflets; uppermost leaves entire; leaf axils producing bulbs. Petals with an oblong spreading limb.

In woods. Very local. Tonbridge Wells; Harefield, Middlesex, and some places in the neighbourhood in Buckinghamshire; and in Herts. Reported from Ayrshire, and also "near Duplin, on the banks of the Esk, Scotland, but scarcely wild" (Brit. Fl.). It is marked on Mr. Moore's list of Irish plants. Mr. H. Trimen has found it abundant in copses on Kingsfold Farm, Rusper parish, Sussex.

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* The Plate is E. B. 309, unaltered.

England, Scotland? Ireland. Perennial. Spring.

Rootstock extensively creeping, white, with small tooth-like scales, each division producing a single stem, or a leaf with a long stalk from the apex. Stem erect, unbranched, 1 to 2 feet high, bare of leaves in the lower part. Stem leaves shortly stalked, the lower ones, like the radical leaves, having 5 to 7 leaflets, which are sessile or shortly stalked, 1½ to 2½ inches long by ½ to ¾ inch broad, remotely and faintly crenate-serrate, or occasionally entire; upper leaves with fewer leaflets, those at the top with only one, so that they become simple, and are not above 1 inch long, and narrow in proportion. Flowers about ¾ inch across, lilac or almost white, turning rose-colour when dried. Pedicels longer than the calyx, which is erect and purplish. Fruit usually abortive.* The purple scaly axillary bulbs as well as the creeping rhizomes propagate the plant. Plant bright green, glabrous. Leaflets ciliated at the margins.

Bulbiferous Coral Wort, or Tooth Wort.

French, *Cardamine Bulbifère.*

SUB-GENUS II.—EU-CARDAMINE.

Pod slender, cylindrical, rather thicker in the middle, and very slightly tapering towards each end. Seed stalk (funiculus) filiform. Cotyledons flat, with the margins not involute. Leaves pinnate or undivided, not whorled.

SPECIES II.—CARDAMINE AMARA. *Linn.*

PLATE CVIII.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXVII. Fig. 4305.

Rootstock long, creeping. Leaves pinnate, with from 5 to 9 leaflets, which are roundish or ovate in the lower, and ovate or oblong in the upper leaves, but in all angulated or bluntly toothed. Petals erect, spreading, obovate, twice or twice and a half the length of the sepals, and about one-fourth longer than the stamens. Pod linear, terminated by a slender style equal in length to twice or thrice the breadth of the pod; stigma slightly notched.

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* I am unable to give a description of the fruit, as I have never seen it.

† The Plate is E. B. 1000, unaltered.

In wet places, particularly by the sides of rivers or brooks in woods. Rather scarce, but generally distributed from Cornwall and Sussex to Moray and Dumbartonshire.

England, Scotland, Ireland. Perennial. Spring.

Rootstock slender, creeping, thinly clothed with root fibres, stoloniferous, passing insensibly into the solitary stem, which rises with a curve, and is from 1 to 2 feet high, erect or slightly zigzag, branched in the upper part in large examples. Leaves not collected into a rosette, but equally distributed over the stem. Leaflets ½ to 1½ inch long, generally sessile; those of the upper leaves narrower than those of the lower, but not conspicuously so; the terminal ones a little larger than the lateral ones. Flowers about ½ inch across, in a lax raceme, generally with secondary racemes below the terminal one, so that the inflorescence becomes sometimes decidedly paniculate. Sepals oval, generally purplish. Petals narrowly obovate, white, sometimes tinged with purple. Anthers purple. Fruit pedicels ½ to ¾ inch long. Pod 1 or 1½ inch long, slightly beaded, terminated by a long slender style with an inconspicuous stigma. Whole plant lively green, shining, smooth, or slightly hairy. The edges of the leaflets are generally ciliated.

Bitter Cress, or Ladies' Smock.

French, *Cardamine Amère.* German, *Das Bittere Schaumkraut.*

This pretty plant, with its large white or cream-coloured flowers, decorates our meadows in the first months of summer. As its specific name indicates, it is bitter, but its bitterness is of an aromatic kind, such as recommends cresses to general use. Sheep crop it readily, but cows refuse to eat it. The beautiful orange-tip butterfly, Anthocharis Cardamines, the Wood Lady of London entomologists, lives in the larva state upon the Cardamine and some of the allied genera.

SPECIES III.—CARDAMINE PRATENSIS. *Linn.*

PLATE CIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXVIII. Fig. 4308.

Rootstock short, creeping. Leaves pinnate, with 9 to 25 leaflets, which are roundish and angulated in the lower, but oblong or strap-shaped and mostly entire in the upper leaves. Petals spreading, broadly obovate, three times as long as the sepals, and more than twice as long as the stamens. Pod linear, terminated by a thickish style about equal in length to the breadth of the pod; stigma entire.

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* The Plate is E. B. 776, unaltered.

In wet meadows and on wet rocks and mountains. Very common throughout the whole of Britain.

England, Scotland, Ireland. Perennial. Spring.

Rootstock short and rather thick, densely clothed with root fibres, sometimes stoloniferous, sending up from the apex an erect slightly zigzag stem from 1 to 2 feet high; sometimes the stem branches into several near the root, and in that case the lateral ones are curved at the base before ascending. Leaves produced in radical tufts or rosettes, and these leaves have the leaflets usually shortly stalked, roundish, entire, or angulated; leaflets ¼ to ¾ inch long, those of the stem leaves much narrower than those of the root leaves, frequently even strap-shaped or linear, and generally entire, but sometimes they are obovate and the terminal ones wedge-shaped and toothed, when the plant is C. dentata of Schultz. Flowers ½ to ¾ inch across, corymbose or shortly racemose. Sepals oblong, tinged with purple, slightly spreading. Limb of the petals roundish, spreading, lilac or white. Anthers yellow. Fruit pedicels ½ to ¾ inch long. Pod cylindrical, 1 to 1½ inch long, not beaded, terminated by the very short thick style with a conspicuous stigma. Whole plant bright green, shining, smooth, or slightly hairy, especially towards the base of the stem and leaf stalks and on the edges of the leaves, which, however, can scarcely be called ciliated.

In damp seasons the stem frequently bears small bulbs at the base and buds on the leaves, which propagate the plant. The flowers are sometimes double, or rather the petals surround small flower buds instead of stamens and pistils, which are reduced to a rudimentary state.

Meadow Ladies' Smock, Cuckoo Flower, May Flower.

French, *Cardamine des Prés.* German, *Das Gemeine Schaumkraut.*

The familiar names of this pretty plant explain themselves. Covering the fields with their white blossoms, they have almost the appearance of linen bleaching, and are thus likened to the garments of "our Lady" whitening in the summer sun. Shakespeare chronicles the time—

"When maidens bleach their summer smocks."

Of its early appearance with the cuckoo as the harbinger of bright days and cloudless skies, we are appropriately reminded in calling it Cuckoo Flower. Shakespeare's "cuckoo-buds" or "cuckoo-birds" were yellow, and doubtless meant the Marsh Marigold; but he writes—

"When daisies pied, and violets blue,
And Lady-smocks all silver white,
And cuckoo-buds of yellow hue,
Do paint the meadows with delight."

According to Ray and other old writers, the flowers of the Cardamine pratensis possess valuable medicinal properties, making them useful in hysteria and epilepsy. In 1767 Sir George Baker read a paper before the College of Physicians on the application of this plant; and we have an accurate account of the preparation of these flowers by toasting them on pewter dishes over a fire, and boiling the powder in bottles covered and stopped with leather, "on no account with a cork." Withering suggests that it may act sometimes by destroying intestinal worms, and thus accounts for its efficacy in epilepsies and other diseases resulting from this cause.

SPECIES IV.—CARDAMINE HIRSUTA. *Linn.*

PLATES CX. CXI.

Rootstock short, creeping, or none. Leaves pinnate, with 7 to 13 leaflets, which are roundish, and slightly angulated in the lower, but oval, oblong, or strap-shaped, and often entire, in the upper leaves; petioles of the stem leaves without fringed auricles. Petals erect, oblanceolate, about twice as long as the sepals, and about one-fourth longer than the stamens. Pod linear, terminated by a style equal to or shorter than the breadth of the pod.

Hairy-leaved Ladies' Smock.

French, *Cardamine Velue*

SUB-SPECIES I.—Cardamine eu-hirsuta.

PLATE CX.*

C. hirsuta, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXVI. Fig. 4304.
C. hirsuta, *Auct. Plur.*

Rootstock none. Radical leaves in a rosette, with larger leaflets than those of the stem leaves. Stamens generally only 4. Young pods usually rising considerably above the corymb of flowers. Style equal in length to about half the breadth of the pod.

On wall-tops and sandy places, and in clearings in woods. Common throughout Britain.

England, Scotland, Ireland. Annual. Spring, Summer.

Stems dividing into several close to the base, 6 to 12 inches high, erect, the lateral ones curved below. Radical leaves numerous, forming a rosette. Leaflets usually stalked, roundish, bluntly angled, ¼ to ½ inch across; the terminal one a little larger than the others. Stem leaves generally few, with the leaflets smaller, narrower in proportion, and generally entire. Flowers corymbose, white, about $\frac{1}{8}$ inch across. Sepals oblong-lanceolate, generally greenish. Fruit pedicels $\frac{1}{4}$ to $\frac{1}{2}$ inch in length. Pods about 1 inch long, slightly beaded, terminated by a short thick style. Whole plant dull green, more or less clothed with short hairs, which are most numerous and spreading on the stem.

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* The Plate is drawn for the present edition by Mr. J. E. Sowerby from a dried specimen from Musselburgh.

SUB-SPECIES II.—**Cardamine sylvatica.** *Link.*

PLATE CXI.*

C. sylvatica, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXVI. Fig. 4303.
C. hirsuta, Eng. Bot. ed. i. No. 492.
C. hirsuta, var. *β*, *Benth.* Handbook Brit. Fl. p. 86. *Hook. & Arn.* Brit. Fl. ed. viii. p. 27.
C. hirsuta, var. *β*, sylvatica, *Coss. & Germ.* Fl des Environs de Paris, ed. ii. p. 108.

Rootstock shortly creeping. Radical leaves few, with smaller leaflets than those of the stem leaves. Stamens 6. Young pods usually not rising above the corymb of flowers. Style equal to or a little longer than the breadth of the pod.

In damp shady woods and by the sides of streams. Not uncommon, and probably distributed throughout the whole of Britain, but often not distinguished from C. eu-hirsuta.

England, Scotland, Ireland. Biennial or Perennial.
Spring and Summer.

This plant differs from C. eu-hirsuta by the absence of a tap-root, and the presence of a rootstock thinly clothed with root fibres. Stem usually taller, more leafy, and the stem leaves having the leaflets though narrower in proportion to those of the radical leaves actually exceeding them in length, being sometimes $\frac{3}{4}$ inch long. The flowers are generally larger, and the whole plant smoother and more shining than C. eu-hirsuta.

When this plant is luxuriant, it sometimes resembles C. amara, from which, however, it may always be distinguished by not having the large spreading petals and long slender style of that species. Sometimes it flowers the first year, and then the tap-root remains, as in C. eu-hirsuta.

SPECIES V.—CARDAMINE IMPATIENS. *Linn.*

PLATE CXII.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXVI. Fig. 4302.

Rootstock short, creeping; or none. Leaves pinnate, with 9 to

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* The Plate is E. B. 492, unaltered.

† The Plate is E. B. 80, unaltered.

15 leaflets, which are lanceolate or elliptical, often cut or lobed. Petioles of the stem leaves expanded at the base, with long narrow acute ciliated auricles embracing the stem. Petals erect, oblanceolate, once and a half as long as the sepals, but most frequently abortive. Pod linear, terminated by a style whose length is about equal to the breadth of the pod.

In shady woods and on moist rocks. Rare. It has been found in the counties of Surrey, Somerset, Gloucester, Glamorgan, Worcester, Warwick, Shropshire, Montgomery, Denbigh, Derby, and York. It has been reported from some of the more northern counties, and from the banks of the Doune in Ayrshire, and the Falls of the Clyde in Lanarkshire.

England, Scotland? Biennial or Annual. Summer.

Tap-root sending up a single stem, sometimes with the intervention of a short rootstock clothed with root fibres. Stem erect, simple or branched, 1 to 2 feet high. Stem leaves very numerous, with the divisions closer and more nearly at right angles to the petiole than in any other of the British species of Cardamine. Leaflets ¼ to 1½ inch long, acute, generally cleft into 2 or 3 lobes towards the base. Petals very rarely present. Fruit pedicels about ¼ inch long. Pods ¾ to 1 inch in length. Style rather slender. Plant nearly glabrous.

This species cannot be confounded with any of the others if attention be paid to the curious auricles at the base of the leaf stalks. The leaves are not truly pinnate, but only pinnatipartite; for all the leaflets are joined by a narrow strip or wing, which runs down each side of the common petiole; this strip is expanded at the base, and from the expansion narrow lobes are given off, which embrace the stem, so that the petiole is sagittate at the base.

Impatient-podded Ladies' Smock.

French, *Cardamine Impatiente.*

The common name of this species arises from the fact that the pods are peculiarly sensitive to the stimulus of heat; on warm sunny days they may be seen and heard exploding with a contractile force, which after expelling the seeds causes the valves of the pod to curl up in a singular manner.

GENUS XI.—ARABIS. *Linn.*

Sepals sub-erect, equal, or the lateral ones slightly gibbous at the base. Petals equal, entire, with moderately long or short claws. Filaments without wings or teeth. Pod linear, cylindrical or subquadrangular, compressed; valves with a dorsal nerve, or several nerves, not opening suddenly with a spring. Style very short or absent. Stigma entire or slightly 2-lobed. Replum transparent. Seeds compressed, usually winged at the top.

Annual or perennial herbs, glabrous or clothed with simple, forked, or starlike hairs. Radical leaves often spatulate. Stem leaves sessile, all entire, toothed or pinnatifid. Flowers white, yellowish, rose-colour, or more rarely purple, disposed in corymbs or short racemes which afterwards elongate.

Wall Cress.

French, *Arabette.* German, *Gänsekraut.*

The first plants described as belonging to this genus were brought from Arabia; hence their name.

SPECIES I.—ARABIS THALIANA. *Linn.*

PLATE CXV.*

Conringia Thaliana, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LX. Fig. 4380.
Sisymbrium Thalianum, *Gaud.* *Bab.* Man. Brit. Bot. ed. v. p. 26. *Hook. & Arn.* Brit. Fl. ed. viii. p. 35.

Rootstock none. Radical leaves oblong, attenuated at the base, and stalked. Stem leaves sessile, elliptical or strap-shaped, attenuated towards the base, not amplexicaul; all entire or dentate. Petals oblanceolate, twice as long as the sepals, slightly spreading. Pods spreading, not twice as long as their pedicels; valves 1-nerved; style short, cylindrical. Seeds ovoid, usually not compressed, without a wing at the apex.

On wall-tops, rocks, dry banks, and recently disturbed ground. Rather common, extending over the whole of Britain.

England, Scotland, Ireland. Annual. Spring.

Stem 3 to 18 inches high, erect, branched in the upper portion in the larger examples, branches ascending. Radical leaves forming a rosette. Stem leaves scattered, distant; all the leaves vary considerably in shape and in the marginal outline, but most commonly the radical and lower stem leaves are remotely denticulate, and the upper stem leaves entire. Flowers ⅛ inch across, white. Pedicels ¼ to ⅝ inch long. Pods ½ to ¾ inch long, slightly curved upwards, more slender and convex than in any other species of the genus. Seeds extremely small, indistinctly punctured or roughened when viewed under a microscope, with the radicle lying on the back of one of the cotyledons and not along their edges as in all the rest of the genus. Plant greyish green, with scattered simple forked and trifurcate hairs.

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* The Plate is E. B. 901, unaltered.

This plant is placed by many botanists in the genus Sisymbrium, on account of the position of the radicle agreeing with the character of that genus rather than with Arabis; the habit, however, is much more that of Arabis, and the cotyledons are occasionally accumbent in A. Thaliana, although usually incumbent. In a few pods I have found both forms of embryo, though the accumbent cotyledons are rare.

Thale Cress, Common Wall Cress, Turkey Pod.

French, *Arabette de Thalle.*

SPECIES II.—ARABIS PETRÆA. *Lamarck.*

PLATE CXIII.*

A. Crantziana, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXXIV. Fig. 4323?
A. Crantziana, *Ehrh.* Herb. 78.
A. hispida, *Linn. fil.* *Sm.* Eng. Fl. Vol. III. p. 211.
Cardamine petræa, *Linn.* Sp. Pl. p. 913.
C. hastulata, *Sm.* Eng. Bot. No. 469.

Rootstock slender, branched, woody. Radical leaves sub-lyrate, pinnatifid or spatulate, toothed, the base attenuated into a leaf stalk; stem leaves spatulate, toothed, or strap-shaped, entire, attenuated at the base, not amplexicaul. Petals obovate, twice as long as the sepals, slightly spreading. Pods spreading, about twice or thrice as long as the pedicels; valves 1-nerved; style short, cylindrical. Seeds elliptical-ovoid, compressed, with only a rudimentary wing at the extreme apex.

On alpine rocks and rocky débris in North Wales, and the Scottish mountains. It occurs in the Island of Harris in the Hebrides, in Sutherland, and even at Baltasound in Shetland; but it is most common on the mountains of Braemar, and in Aberdeenshire it is frequently to be found on the banks of the Dee to within a few miles of Aberdeen, no doubt carried down by streams from the higher localities. It is also found in Ben Bulben, Ireland.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Rootstock dividing into several short branches, each of which produces a rosette of leaves. Stems 4 to 8 inches high, ascending, usually flexuous. Radical leaves more or less distinctly stalked, and pinnatifid towards the apex, with short triangular or oblong spreading lobes, the terminal one larger than the others, sometimes spatulate, with only a few teeth at the edges; stem leaves few, the lower ones resembling the root leaves, the uppermost much narrower, sessile, and usually entire. Flowers corymbose, ¼ inch across, pure white ("with a purple tinge"—Brit. Fl.). Petals slightly spreading. Pedicels about ¼ inch long, spreading or slightly ascending. Pods ½ to 1 inch long, slightly beaded. Seeds elliptical-ovoid, not winged at the summit, but sometimes with a raised margin there. Leaves deep green, with simple and forked hairs; sometimes only ciliated, or even quite glabrous. Stem usually glabrous, at least in the upper part, but sometimes with spreading hairs throughout.

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* The Plate is E. B. 469, unaltered.

I have doubts whether the German A. Crantziana be not distinct from the present plant, at least as a sub-species. The few specimens I have seen are without pods; but if Reichenbach's figure be correct, they are much longer and the seeds rounder than in the Scotch plant.

Alpine Rock, or Wall Cress.

French, *Arabette des Pierres.*

SPECIES III.—ARABIS STRICTA. *Huds.*

PLATE CXIV.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXXIX. Fig. 4337.

Rootstock slender, simple, woody. Radical leaves oblanceolate, sinuated or toothed at the edges, attenuated at the base, but scarcely stalked; stem leaves sessile, oblong, toothed, the upper ones semi-amplexicaul. Petals oblanceolate, wedge-shaped, twice as long as the sepals, sub-erect. Pods ascending-erect, three to five times as long as the pedicels; valves 1-nerved. Style short, cylindrical. Seeds oval-oblong and slightly winged especially at the apex.

Extremely local, and only occurring on the carboniferous limestone at St. Vincent's Rocks and a few other places in the vicinity of Bristol and Cheddar.

England. Perennial. Spring.

Stems often dividing into several close to the base; individual stems erect or ascending, 4 to 9 inches high, simple or slightly branched. Radical leaves forming a very compact rosette, not so distinctly stalked as in A. petræa, and less suddenly dilated towards the tip, with short triangular or oblong lobes pointing towards the apex; stem leaves few. Flowers cream-colour, with the petals longer, narrower, and more erect than in the last species. Pedicels about ¼ inch long. Pods from 1 to 1½ inch long. Seeds dark brown, much compressed. Leaves deep green, shining, clothed and ciliated with simple and forked hairs, which also occur upon the stem.

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* The Plate is E. B. 614, unaltered.

Bristol Rock Cress.

SPECIES IV.—ARABIS HIRSUTA.

PLATES CXVI. CXVII.

Rootstock slender, nearly simple, woody. Radical leaves oblanceolate, attenuated at the base into a short footstalk. Stem leaves applied to stem, oblong or oblong-lanceolate, toothed or entire, the upper ones more or less semi-amplexicaul. Petals narrowly oblanceolate, about thrice as long as the sepals, erect. Pods erect, five to ten times as long as the pedicels; valves 1-nerved; style scarcely perceptible. Seeds in one row, oval or oblong, much compressed, narrowly winged all round (in the British forms), with the wing broadest at the apex.

Hairy Wall Cress, Hairy Tower Mustard.

French, *Arabette à Velue.*

The root is strong and woody, which enables this plant to have a perennial life in its dry and exposed situations on walls and calcareous rocks. In cultivation it loses much of its hairiness, and grows into a tall and elegant plant.

SUB-SPECIES I.—**Arabis ciliata.** *R. Brown.*

PLATE CXVII.*

A. ciliata, *Auct. Angl.* nec aliorum.

Stem leafy up to the inflorescence. Uppermost stem leaves truncate, rounded at the base, with the rudiment of a footstalk, and so scarcely amplexicaul. Pods four to six times as long as the pedicels, and in the broadest part more than twice the breadth of the pedicels. Seeds once and a half as long as broad, rounded at the base and apex.

Var. *α, genuina.*

Leaves glabrous, except at the margins, where they are ciliated.

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* The Plate is E. B. 1746, corrected by Mr. J. E. Sowerby, and with ripe pods added.

Var. β, *hispida.*

Leaves clothed with forked and trifurcate hairs all over.

Very rare. Var. α by the seaside at Ringville, Connemara, Ireland. Var. β near Tenby, Pembrokeshire, and probably in other places in the West of England but overlooked on account of its resemblance to A. sagittata.

England, Ireland. Biennial. Spring, Summer.

Rootstock producing rosettes of oval or elliptical leaves, attenuated at the base into a footstalk so as to become oblanceolate, from which one or more stems 3 to 9 inches high are produced. Stem densely clothed with leaves throughout, the leaves becoming narrower and broader at their base in proportion as they are placed higher on the stem, but even the very uppermost have always the rudiments of a footstalk. Leaves all entire or very slightly toothed. Flowers $\frac{1}{5}$ inch across, white. Pedicels $\frac{1}{4}$ inch long. Pods 1 to $1\frac{1}{2}$ inch long by $\frac{1}{10}$ inch broad. Seeds about $\frac{1}{20}$ inch long, broadly oval, rounded at each end, finely punctured (under a lens), distinctly winged all round.

Arabis ciliata of Continental authors is A. arcuata, "Shuttleworth" (Godet, Flore de Jure, p. 38), and seems to be another sub-species of A. hirsuta quite distinct from the present, having the leaves less closely placed on the stem, which is arched at the top before the pods are ripe, and the seeds are without a wing.

Fringed Rock Cress.

SUB-SPECIES II.—Arabis sagittata. *D. C.*

PLATE CXVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLII. Fig. 4343 bis.
A. hirsuta, *Auct. Angl.* (non *Reich.* ?)
Turritis hirsuta, *Sm.* Eng. Bot. No. 587.

Stem with the highest leaf usually an inch or two below the inflorescence. Uppermost stem leaves truncate, slightly cordate or sagittate at the base, semi-amplexicaul. Pods four to nine times as long as the pedicels, and at the broadest part not twice the breadth of the pedicels. Seeds twice as long as broad, truncate at the base, rounded at the apex.

Hairy Rock Cress.

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* The Plate is E. B. 587.

Var. *α*, *vulgaris.*

Stem and leaves clothed with simple and forked hairs.

Var. *β*, *glabrata.*

Stem and leaves smooth, or the latter more or less ciliated at the margins.

On dry banks, rocks, and old walls. Var. *α* not uncommon, though rather sparingly distributed throughout the whole kingdom from Cornwall and Kent to Ross-shire. To var. *β* apparently belongs a plant gathered by Mr. Andrews in Great Arran Island on the west coast of Ireland, which Mr. Hewett C. Watson has in his Herbarium; but these specimens have not mature pods and seeds, from which the only definite characters by which this can be separated from A. ciliata, var. genuina, are taken, though in the flowering state it agrees remarkably well with A. hirsuta, var. glabrata (Wahl.), sent from Gothland by Mr. C. Hartman. These Irish specimens are the only ones which I have seen that can be referred to var. *β* of A. sagittata.

England, Scotland, Ireland. Biennial or Perennial. Summer.

Extremely like A. ciliata, but usually taller, the stems being 4 inches to 2 feet or more high, and the leaves, at least the upper ones, have no rudiment of a leaf stalk, but are produced at the base into two rounded or slightly pointed lobes. The flowers are rather smaller; the pods longer and considerably narrower, being 1 to 1½ inch long by a little less than $\frac{1}{20}$ inch broad, and are also less compressed. The seeds are a little shorter and only half as broad, truncate at the base, from which the sides are quite parallel with each other to the rounded apex, and like those of A. ciliata they appear finely punctured under the microscope and winged all round. Plant greyish green, more or less hairy.

A. hirsuta of British authors is certainly the plant usually called A. sagittata by Continental writers, as that species is described as having the seeds punctured, in contradistinction to those of A. hirsuta, "Scop." which has the seeds not punctured, and winged only at the apex according to Reichenbach, Koch, Boreau, Godet, etc. Reichenbach also represents the seed of this form (which may be called A. Reichenbachii) as enlarged towards the apex, a character which separates it still more widely from the British plant. It is probable that these plants, together with A. Gerardi (Bess), A. Allionii (D. C.), A. ciliata (Brown), and A. arcuata (Shuttl.), are all merely sub-species of one super-species, to which I have given the name of A. hirsuta, which has been applied to most of them separately or together.

SPECIES V.—ARABIS TURRITA. *Linn.*

PLATE CXVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLIV. Fig. 4345.

Rootstock rather slender, nearly simple, woody, or none. Radical leaves on long footstalks, oval or elliptical, attenuated at both ends; stem leaves spreading, amplexicaul, oblong or oblong-lanceolate, cordate or sub-sagittate at the base; all dentate. Pods drooping, curved into an arc and twisted on their axis in the basal fourth of their length, sub-secund; valves with a dorsal nerve; style short. Seeds cylindrical, in 1 row, oval, much compressed, winged all round.

On old walls, but only an introduced plant. It occurs on walls at Cambridge, Oxford, and Cleish Castle, Kinross-shire.

[England, Scotland]. Biennial or Perennial. Spring.

Rootstock producing barren rosettes of leaves and flowering stems; the latter erect, 1 to 2 feet high, nearly simple. Stem leaves much larger than in any of the preceding species, being 1½ to 2 inches long. Flowers very pale yellow, ⅜ inch across. Petals oblanceolate, twice as long as the sepals, with the limb slightly spreading. Lower pedicels produced from the axils of the leaves; fruit pedicels ¼ to ½ inch long. Pods 4 to 6 inches long by ⅛ inch broad, with anastomosing veins but no dorsal nerve. Seeds finely punctured. Plant green, with a grey or whitish tinge, more or less thickly covered with very short stellate pubescence.

Tower Wall Cress, Tower Turkey Pod, Pendulous-podded Wall Cress.

French, *Arabis Tourrette.*

SPECIES VI.—ARABIS PERFOLIATA. *Lamarck.*

PLATE CXIX.†

Turritis glabra, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLIV. Fig. 4346.
Turritis glabra, *Linn.* et *Auct. Plur.*

Rootstock none. Radical leaves oblanceolate, denticulate, or pinnatifid-runcinate, attenuated at the base into a short footstalk; stem leaves applied to the stem and amplexicaul, lanceolate, sagittate at the base, entire. Petals narrowly oblanceolate, scarcely twice as long as the sepals, erect. Pods erect; valves with a dorsal nerve; style obsolete. Seeds in 2 rows, shortly rhomboidal-oval, plane or convex, without a wing, but surrounded by a dark brown line.

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* The Plate is E. B. 178, with a pod added by Mr. J. E. Sowerby.

† The Plate is E. B. 777, unaltered.

On dry banks, roadsides, and stony places. Rather rare and local; and though it occurs in a good many of the English counties it is very scarce in Scotland, where Dumbartonshire and Perthshire appear to be its northern limits. It is not in Mr. Moore's Irish list, but marked as occurring in Ireland in the last edition of Professor Babington's Manual.

England, Scotland, Ireland. Biennial or Annual. **Summer.**

Stem erect, 2 or 3 feet high, nearly simple or slightly branched in the upper part. Radical leaves in a rosette, generally withering before the plant flowers; stem leaves numerous, 1 to 3 inches long. Flowers cream-colour, about ¼ inch across. Pedicels about ½ inch long. Pods 2 to 2½ inches long by $\frac{1}{20}$ inch broad. Seeds very small. Radical leaves, lowest stem leaves, and base of the stem green, with soft hairs, generally bi- or tri-furcate. Upper part of the stem and its leaves smooth, very glaucous.

The only character which separates the genus Turritis from Arabis is the seeds being in a double row instead of in one row, as in the latter; but the division appears to be unnatural, and I follow Mr. Bentham and those Continental authors who unite them.

Smooth Tower Wall Cress or Mustard.

French, *Arabis Glabra.*

GENUS XII.—BARBAREA. *R. Brown.*

Sepals sub-erect, equal, or the lateral ones slightly gibbous at the base. Petals equal, entire, with moderately long claws. Filaments without wings or teeth. Pod linear, quadrangular, compressed; valves with a strong dorsal nerve or keel; style short; stigma entire or slightly bilobed; replum transparent. Seeds oblong-ovoid, compressed, not winged, punctate, disposed in one row in each cell of the pod.

Biennial or perennial herbs with angular stems and glabrous shining leaves; the lower ones lyrate, the upper toothed or pinnatifid. Flowers yellow, disposed in corymbs or short racemes, which afterwards elongate.

French, *Barbarée.* German, *Barbarea.*

This genus was anciently called St. Barbara's Herb, and the species were considered to be peculiarly under the patronage of that saint, probably because they were sown about the day formerly consecrated to her, our 16th of December.

SPECIES I.—BARBAREA VULGARIS. *R. Brown.*

PLATES CXX. CXXI. CXXII. CXXIII.

Radical leaves lyrate, with the terminal lobe usually very large, equalling or exceeding in breadth the width of the leaf measured across the uppermost pair of leaflets, and generally three or four times the length of one of them. Pods in a dense raceme, three to eight times as long as the pedicels, and at the broadest part considerably exceeding the pedicels in thickness, contracted at the tip into a style longer than the greatest width of the pod.

Winter Cress, Herb St. Barbara, Yellow Rocket.

French, *Roquette, L'Herbe Sainte Barbe, Barbarée à Siliques Étalées.*
German, *Winterkresse, Barbenkraut.*

Under the name of Winter Cress and Winter Rocket this plant has long been cultivated in gardens as an early salad. In Sweden they boil and eat it as a vegetable in the same way as cabbage. The constant use of smoked and dried meat and fish, especially during the long winter, renders any addition desirable to the fresh vegetable diet of the people. It is worthy of remark that numbers of our Cruciferous and commonest wayside plants might with great advantage be used as articles of food, and would be valuable to our poor families in cold winters when garden vegetables are scarce or expensive. Many field and roadside herbs, such as Charlock, Shepherd's Purse, Hedge Garlic, &c., which are commonly thrown aside as useless or noxious weeds, would afford wholesome food in times of scarcity. The habit of eating fresh green vegetables is almost essential to health, and it would be well if our clergy and people of influence in rural districts would acquaint themselves with the properties and nature of our common plants, in order to instruct and guide their poorer neighbours to the right use of the health-giving substances with which they are surrounded. This Winter Cress is seldom destroyed by the frost, and may be seen peeping up through the snow in the depth of winter. It has a pungent and somewhat bitter taste. Cows eat it, but horses, goats, and sheep rarely touch it.

SUB-SPECIES I.—**Barbarea eu-vulgaris.**

PLATE CXX.*

B. vulgaris, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLVII. Fig. 4356.
B. vulgaris, *Auct. Plur.*
Erysimum Barbarea, *Linn.* *Sm.* Eng. Bot. No. 443.

Radical leaves lyrate, with a large roundish terminal lobe usually very slightly exceeding in breadth the width of the leaf measured across the uppermost pair of leaflets; uppermost leaves oval, deeply and irregularly toothed; all dark green. Flowers in a raceme, the length of which generally scarcely exceeds the breadth. Petals twice as long as the sepals. Pods in a dense raceme, generally ascending, sometimes spreading when young, three to six times as long as the pedicels; seeds with their length about once and a half their breadth.

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* The Plate is E. B. 443, unaltered.

Hedgebanks, roadsides, and by the edges of streams and ditches. Common throughout the kingdom, extending in Scotland as far north as Morayshire.

England, Scotland, Ireland. Biennial and Perennial. Summer.

Stem erect, angular, 1 to 3 feet high, much branched in the upper part. Radical leaves in a rosette, pinnate, lyrate, with 6 to 10 leaflets, of which the terminal one is usually much larger than the others, and the lateral ones decreasing in size towards the base; lower stem leaves resembling the radical leaves, but with enlarged ciliated auricles at the base of the petiole which embrace the stem; intermediate leaves pinnatifid with a large toothed terminal lobe, and a few narrow lateral ones amplexicaul at the base with pointed auricles; uppermost leaves with a few irregular blunt teeth and sagittate-amplexicaul at the base as in the lower leaves. Flowers about ¼ inch across, bright yellow; sepals oval, yellowish; petals oblanceolate; pedicels about ⅙ inch long. Pods ¾ to 1 inch long; seeds yellowish brown, shortly oblong, irregularly plano-convex, covered with raised points having a tendency to run into lines. Foliage deep green, shining and glabrous, rarely with a few hairs. Radical leaves in this as in the other forms usually decaying by the time the flowers expand.

A form with the young pods arched and spreading occurs in shady places. It has often been mistaken for B. arcuata, but is apparently merely a state of B. eu-vulgaris. It is this plant which is figured by Reichenbach, in Sturm's "Deutchlands Flora." The true B. arcuata is, however, figured by him in his "Icones Floræ Germanicæ et Helveticæ."

Sub-Species II.—**Barbarea arcuata.** *Reich.*

PLATE CXXI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLVIII. Fig. 4357.
Koch, Syn. Fl. Germ. ed. ii. p. 39. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 91.
Barbarea præcox, *Fries,* Mant. III. p. 75 (non *R. Brown*).

Radical leaves lyrate, with a large roundish terminal lobe usually very slightly exceeding in breadth the width of the leaf measured across the uppermost pair of leaflets; uppermost leaves oval, deeply and irregularly toothed, all yellowish green. Flowers in a raceme the length of which generally considerably exceeds its breadth. Petals rather more than twice as long as the sepals. Pods in a rather lax raceme, arched and spreading when young, five to eight times as long as the pedicels. Seeds more than twice as long as broad.

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* The Plate is drawn by Mr. J. E. Sowerby from a dried Irish specimen.

Apparently rare; the only British specimens I have seen being from Loughgall, Armagh, collected by Mr. A. G. More; all the other specimens labelled B. arcuata which have come under my notice being the form of B. eu-vulgaris, mentioned at the end of the description of that plant. It is highly probable, however, that the late Mr. Borrer found the plant somewhere in the North of England, as he had it in cultivation in his garden, and also has mentioned finding B. arcuata in Northamptonshire, Yorkshire, and Northumberland. Mr. Borrer, however, in writing to Mr. Watson, stated that he had doubts whether the British plant called B. arcuata was identical with the Continental plant known under that name; so that it is quite possible that the plant growing in his garden might be of foreign origin and procured for the purpose of comparison.

England? Ireland. Biennial. Early Summer.

Extremely like B. eu-vulgaris, especially the state with arched and spreading pods, but the whole plant is of a yellower green, the flowers rather larger, and the petals more persistent, so that they usually do not fall off until the raceme has lengthened considerably. The fruiting raceme is more lax, the pods rather longer, the style longer, being more than twice as long as the breadth of the pod; the seeds smaller, darker in colour, and much narrower in proportion to their length.

Reichenbach's Yellow Rocket.

SUB-SPECIES III.—**Barbarea stricta.** *Andrz.*

PLATE CXXII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLVII. Fig. 4355.
Bab. Man. Brit. Bot. ed. v. p. 23.
Bor. Fl. du Centre de la Fr. ed. iii. Vol. II. p. 39. *Koch,* Syn. Fl. Germ. ed. ii. p. 39.
B. parviflora, *Fries,* Mant. I. p. 207.

Radical leaves lyrate, with a very large oval terminal lobe usually considerably exceeding in breadth the width of the leaf measured across the uppermost pair of leaflets; uppermost leaves oval, irregularly toothed; all dark green. Flowers corymbose. Petals about one-fourth longer than the sepals. Pods in a dense raceme, erect even when young, four to six times as long as the pedicels. Seeds nearly twice as long as broad.

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* The Plate is from a drawing by Mr. J. E. Sowerby.

Local. Plentiful in Yorkshire, and it also occurs in Northamptonshire and Essex.

England. Biennial? Summer.

Radical leaves with the terminal lobe much longer than in the two preceding plants; the sepals narrower; the petals shorter, narrower, and paler yellow; the fruiting raceme longer and more slender; and the branches of the stem less spreading than in either B. eu-vulgaris or B. arcuata. Seeds about the length of those of the latter, but broader.

Small-flowered Yellow Rocket.

SUB-SPECIES IV.—**Barbarea intermedia.** *Boreau.*

PLATE CXXIII.*

Bab. Man. Brit. Bot. ed. v. p. 23.
Gr. & Godr. Fl. de Fr. Vol. I. p. 91. *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 40.

Radical leaves lyrate, with the terminal lobe oval or ovate, not exceeding in breadth or even somewhat narrower than the width of the leaf measured across the uppermost pair of leaflets; stem leaves pinnate, the upper ones pinnatifid with long slender lateral lobes and a terminal one a little larger than the others; all yellowish green. Flowers in a raceme, the length of which is about equal to the breadth. Petals about twice as long as the sepals. Pods in a dense raceme, erect even when young, four to six times as long as the pedicels. Seeds very nearly as broad as long.

In clover fields near Manchester; also near Bowdon, Cheshire; Bilsdale, Yorkshire; near Armagh, Ireland; and Mr. J. G. Baker has seen it near Dorking, Surrey; but, as in all cases it is found in cultivated fields, it is not improbable that it may have been introduced from the Continent with clover seed.

England, Ireland. Biennial. Summer.

This form differs from the other three which are here placed under B. vulgaris in having the terminal lobe of the leaves much smaller in proportion to the lateral leaflets, which are also more numerous. The leaves, at the base and middle of the stem especially, present a remarkable difference, being lyrately pinnate, with several pairs of leaflets wider from tip to tip than the terminal lobe, which is ovate, sub-rhomboidal or occasionally wedge-shaped with a few lobes at the tip. Boreau states that the petals "slightly exceed the calyx;" but in the Lancashire and Cheshire specimens in my possession they are rather more than twice as long. The pods are applied to the axis of the raceme as in B. stricta, but are shorter and with shorter pedicels. The seeds are larger than those of B. stricta and B. arcuata and much broader, broader even than those of B. eu-vulgaris.

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* The Plate is from a drawing by Mr. J. E. Sowerby from a Lancashire specimen.

Intermediate Yellow Rocket.

SPECIES II.—**BARBAREA PRÆCOX.** *R. Brown.*

Plate CXXIV.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XLIX. Fig. 4358.
B. patula, *Fries,* Mant. III. p. 76.
Erysimum præcox, *Sm.* Eng. Bot. No. 1129.

Radical leaves lyrate with the terminal lobe largest, roundish or ovate, equalling in breadth the width of the leaf measured across the uppermost pair of leaflets, and generally twice or thrice the length of one of them; stem leaves pinnate, the upper ones pinnatifid with long slender lateral lobes, and a terminal one a little larger than the others. Flowers in a short lax raceme. Petals about thrice as long as the sepals. Pods in a very lax raceme, spreading-ascending, twelve to twenty times as long as the pedicels, and very slightly exceeding the pedicels in thickness, contracted at the tip into a style considerably shorter than the greatest width of the pod. Seeds nearly as broad as long.

Roadsides and newly-trenched ground, in many places in England and some in Scotland, but no doubt escaped from cultivation; this plant being the American Cress often cultivated as a spring salad.

[England, Scotland, Ireland]. Biennial. Summer.

The very long distant spreading pods with their very short style distinguish the present plant from all of those included under B. vulgaris. It, however, presents considerable resemblance in the leaves and seeds to the sub-species B. intermedia, but that

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* The Plate is E. B. 1129, unaltered.

form has the fruiting raceme very dense and the pods short and applied to the stem. In B. præcox the leaflets or segments of the stem leaves are more numerous than in B. eu-vulgaris and B. arcuata, and the terminal lobe is much smaller; the upper leaves are also pinnatifid and not merely toothed or sinuated The seeds are only about one-fourth longer than broad and are more rounded and less quadrangular in outline than in B. eu-vulgaris.

Early Winter Cress, American Cress.

French, *Barbarée Précoce, Cresson d'Amérique.* German, *Americanischer Kresse.*

This species is preferred by many to the former. It is less bitter in salads, and is in demand in some places throughout the year.

GENUS XIII.—NASTURTIUM. *R. Brown.*

Sepals erect or spreading, equal. Petals equal, entire, with very short claws. Filaments without wings or teeth. Pods linear, cylindrical or ovoid, not compressed; valves convex, without a dorsal nerve or sometimes with a faint one; replum transparent. Seeds roundish or ovoid, more or less compressed, not winged.

Annual, biennial, or perennial herbs with undivided pinnatifid or pinnate leaves, glabrous or clothed with simple hairs. Flowers small, yellow or more rarely white, disposed in corymbs or short racemes which afterwards elongate.

French, *Cresson.* German, *Brunnenkresse.*

The name of this genus of plants comes from *nasus*, the nose, and *tortus*, tormented; the acrid taste and smell of the species affecting the nose painfully.

SPECIES I.—NASTURTIUM OFFICINALE. *R. Brown.*

PLATE CXXV.*

Sisymbrium Nasturtium, *Linn.* *Sm.* Eng. Bot. No. 855.

Leaves pinnate. Petals white, nearly twice as long as the sepals. Pods shortly cylindrical, about as long as or slightly exceeding the pedicels; valves without a distinct dorsal nerve; style inconspicuous, shorter than the diameter of the pod.

Var. *α, vulgaris.*

N. officinale, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. L. Fig. 4359.

Stem decumbent or ascending. Terminal leaflet roundish-ovate, considerably broader than any of the lateral ones, which are commonly oval.

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* The Plate is E. B. 855, and represents var. *α.*

Var. β, *siifolium.*

N. siifolium, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. L. Fig. 4361.

Stem erect. Terminal leaflet lanceolate, not broader than the lateral ones, which are elliptical.

In streams and ditches. Var. α common throughout England and the South of Scotland, more rare towards the North, but reaching as far as Orkney. Var. β apparently rare; as I have myself only seen it by the side of a ditch leading from Long Niddrie to the sea in Haddingtonshire, but other observers speak as if it had fallen under their notice more frequently.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Stem procumbent and rooting at the base, then floating or ascending, angular, hollow, branched, 1 to 2 feet long in var. α, and in var. β often quite erect, and 3 to 6 feet high. Leaves pinnate, with usually 5 to 7 leaflets, but sometimes as many as 13 to 15 in var. β; leaflets distant, sessile, slightly angulated, the terminal one frequently sub-cordate at the base in var. α. Flowers white, about ⅕ inch across; edges of the sepals and filaments generally tinged with purple. Fruit pedicels ¼ to ½ inch long, spreading horizontally or even slightly deflexed. Pods beaded, ⅜ to ¾ inch long, forming an obtuse angle with the inner side of the pedicel; valves with numerous fine nerves but not a conspicuous middle one. Seeds in 2 distinct rows in each cell of the pod, reddish brown, roundish, much compressed, the surface roughened with small protuberances. Whole plant deep green, the upper side of the leaves sometimes tinged with olive-brown, glabrous and shining.

Var. β seems to pass imperceptibly into var. α, from which, however, it may be permanently distinct, as in the only station where I have seen it, it was to be seen year after year without any variation, until the ditch was filled up, about ten years ago, when of course the plant entirely disappeared. Professor Babington considers N. microphyllum, figured by Reichenbach, Tab. L. Fig. 4360, as a state of N. officinale when growing out of water. Reichenbach's figure represents a plant with very much the habit of Cardamine amara, having the petals about twice as long as the common Water-Cress, from which it differs remarkably in the pedicels being about one-half longer than the pods. Nasturtium officinale can be confounded with none of the British Cruciferæ, except those of the genus Cardamine, from which its short turgid pods, with the seeds in 2 rows, form a sure method of distinguishing it.

Common Water-Cress.

French, *Cresson Officinal, Cresson de Fontaine.*

German, *Die Gebraüchliche Brunnenkresse, Wasserkresse, Quellenranke.*

This plant undoubtedly got its name Officinal from its wholesome properties. Its ancient reputation as an article of food, valuable both for its pleasant pungent taste and its antiscorbutic properties, is well founded. Recent writers on the subject of diet have shown that in partaking of fresh uncooked vegetable food in the shape of salads and fruit we are obtaining those salts of potash and other constituents so necessary to health which in the process of cooking are dissolved away. Water-Cresses are found to contain chloride of potassium and sulphur in considerable quantities, and iodine occasionally. No better vehicle for the introduction of these important substances into the system can there be than fresh bright Water-Cresses; and our old friend Gerarde's notion of their value presages all the modern discoveries as to their virtues. He says that the eating of Water-Cresses restores their accustomed bloom to the faded cheeks of sickly young ladies. He might have added that a walk to the running stream where they grow would enhance the effects of the remedy. So large is the consumption of Water-Cresses in London that they are cultivated by market gardeners to a great extent by means of artificial water supplies, but none are so delicious as those from natural streams. Our popular street cry has been rhymed by Swift thus:—

"Fine spring Water-Grass,
Fit for lad or lass."

The use of this excellent salad plant was known at a very remote period. Among the Greeks it was highly esteemed, not only as an agreeable vegetable but as a valuable medicine; it was considered particularly useful in disorders of the brain, hence a common proverb among the Greeks was, "Eat Cress to learn more wit." Xenophon attributed still greater virtues to it, recommending the Persians to give it to their children as a means of adding to their strength and stature. In the time of Pliny it was still given with vinegar as a remedy for insanity and kindred affections, and was also highly esteemed as a salad. The old Northmen possibly used it as food, for the word *kras* was applied by them to the herb-flavoured porridge which often formed the meal of the hardy Vikings, as well as to the plant which was one of its ingredients. The name Cress has, according to writers, many origins. It is found in various forms in all Teutonic languages. Some have derived it from the cross-like form of the flower. Chaucer employs the Saxon form of the word *kers* to signify anything worthless:—

"Of paramours ne raught he not a *kers*."

From which, perhaps, is derived the phrase of not caring a *curse* for a thing. The Water-Cress is now seldom used otherwise than as a salad, excepting in France, where it is dressed like spinach, and the picked leaves are served with roasted fowl as *Poulet aux cressons.* Formerly the Water-Cress was in high repute for its medicinal qualities, and boiled with brooklime, scurvy-grass, and Seville oranges, formed the "spring juices" so much esteemed by our grandmothers as a health-giving draught for children. It is probable that the fresh green leaves as an adjunct to the breakfast or tea-table are a far better antiscorbutic than any such compound, and it is greatly to be recommended as a common practice in all households of young people, that a portion of uncooked green food should form a part of the daily diet. Care must be taken in choosing Water-Cresses for table that they are not confounded with a poisonous plant with which they grow, called Fool's-Cress (Sium nodiflorum). An acquaintance with the distinctions of the orders Cruciferæ and Umbelliferæ will prevent this mistake. The most obvious of these distinctions, and which can be applied at all seasons of the year, is the character of the leaf-stalks or petioles. In the Umbelliferæ these clasp or embrace the stem, which they do not in the Cruciferæ. In this way the poisonous Sium may be distinguished from the wholesome Water-Cress.

SPECIES II.—NASTURTIUM SYLVESTRE. *R. Brown.*

PLATE CXXVI.*

Reich. Ic. Fl. Germ et Helv. Vol. II. *Tetr.* Tab. LV. Fig. 4368.
Sisymbrium sylvestre, *Linn.* *Sm.* Eng. Bot. No. 2324.

Rootstock creeping. Leaves deeply pinnatifid or pinnatipartite, the lowest often sub-lyrate and the uppermost merely toothed. Petals about as long as the sepals, yellow. Pods cylindrical, about as long as the pedicels (sometimes a little shorter, and sometimes exceeding them); valves with an indistinct dorsal nerve; style nearly equal to the width of the pod. Seeds in 1 zigzag row in each cell of the pod.

By the banks of ditches and rivers, and in other damp places. Not uncommon in England. In Scotland, however, it is very rare, and probably introduced with ballast, at least in the Fifeshire locality of Inverkeithing.

England, [Scotland,] Ireland. Perennial or Biennial.
Summer, Autumn.

Rootstock rather slender, branched and creeping, producing ascending angular flexuous stems which are often diffusely branched. Leaves very variable, the lowest of all frequently lyrate, with a large terminal and a few lateral lobes. Most frequently, however, these as well as the stem leaves are deeply pinnatifid, sometimes almost pinnate with oblong or lanceolate cut toothed or nearly entire lobes. Flowers in short racemes, bright yellow, about $\frac{1}{5}$ inch across, with a spreading calyx, the petals from once and a half to twice as long as the calyx. Pedicels $\frac{1}{4}$ to $\frac{1}{2}$ inch long, or even more. Fruit pedicels commonly spreading, sometimes a little deflexed, especially before the fruit is quite ripe, and in that state they are sometimes only ascending. Pod from $\frac{3}{8}$ to $\frac{3}{4}$ inch long, more slender than in N. officinale, and the valves having the dorsal nerve indicated at least towards the base. Seeds small, reddish brown, ovoid, plano-convex, finely punctured, scarcely in 2 rows, the narrowness of the pod bringing them into 1 irregular row. Plant yellowish green, glabrous, or with a few hairs on the upper part of the stem.

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* The Plate is E. B. 2324.

N. rivulare of Reichenbach, Tab. LIII. Fig. 4365, and N. anceps (D. C. non Reich.), Billot's exsicc. No. 314, appear to me to be only states of the present plant, not even worthy of the name of varieties. I have seen the pods shorter than, equal to, and longer than the pedicels, all on the same plant.

Creeping Yellow Cress, Water Rocket, Wild Nasturtium.

French, *Cresson Sauvage.*

SPECIES III.—NASTURTIUM PALUSTRE. *D. C.*

PLATE CXXVII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LIII. Fig. 4362.
N. terrestre, *R. Brown.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 28.
Sisymbrium terrestre, *Sm.* Eng. Bot. 1747.
Roripa nasturtioides, *Spach.* Veg. Phan. Vol. VI. p. 506. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 126.

No rootstock. Leaves deeply pinnatifid or sub-lyrate, with the segments irregularly toothed. Petals not longer than the sepals, yellow. Pods ovoid or oblong, about as long as the pedicels; valves without a dorsal nerve; style much shorter than the width of the pod. Seeds in 2 rows in each cell of the pod.

In damp places, especially by the sides of ponds which partly dry up in summer. Not uncommon in England and the South of Scotland, where Aberdeenshire and Argyleshire appear to be its northern limit.

England, Scotland, Ireland. Annual or Biennial.
Summer, Autumn.

Stem erect, 3 inches to 2 feet high, branched. Leaves deeply pinnatifid, sometimes almost pinnate, with the lateral segments oblong, and the terminal one usually ovate. Flowers about $\frac{1}{8}$ inch across, yellow, with a spreading calyx. Pedicels about $\frac{1}{4}$ inch long, slightly deflexed. Pods $\frac{1}{4}$ to $\frac{1}{3}$ inch long, much swollen, so that the length is not more than twice or thrice the breadth, the apex suddenly contracted into the extremely short style, which is usually little more than half the diameter of the pod. Seeds somewhat angular, roundish oblong, pale yellowish brown, finely punctured. Plant yellowish green, glabrous.

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* The Plate is E. B. 1747.

The absence of a creeping rhizome, the smaller flowers, and short thick pod, distinguish this from the last species, which has, moreover, the segments of the leaves usually narrower and less distinctly toothed.

Marsh Yellow Cress, Annual Yellow Cress or Rocket, Marsh Nasturtium, Small Jagged Water Radish.

French, *Cresson des Marais.*

SPECIES IV.—NASTURTIUM AMPHIBIUM. *R. Brown.*

PLATE CXXVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. LI. LII. Fig. 4363.
Armoracia amphibia, "*Koch.*" *Bab.* Man. Brit. Bot. ed. v. p. 31. *Hook. & Arn.* Brit. Fl. ed. viii. p. 28.
Roripa amphibia, *Bess.* *Gr. & Godr.* Fl. de Fr. Vol. I. p. 126.
Sisymbrium amphibium, *Linn.* *Sm.* Eng. Bot. No. 1840.

Rootstock stoloniferous, but not creeping. Leaves elliptical or oblanceolate, usually toothed or entire, more rarely pinnatifid. Petals about twice as long as the sepals, yellow. Pods ovoid or oblong, one half to one quarter the length of the pedicels; valves without a dorsal nerve; style about equal to the width of the pod. Seeds in 2 rows in each cell of the pod.

In damp places, especially by river sides, and in ditches. Rather rare, though found in most of the counties of England; its occurrence in Scotland is doubtful.

England, Scotland? Ireland. Perennial. Summer, Autumn.

Stem erect, 2 to 4 feet high, slightly branched. Leaves attenuated at the base, with the margin entire, serrated, or with projecting teeth, and occasionally the leaves are pinnatifid, especially when growing under water; the base of the leaves is frequently semi-amplexicaul, with acute auricles. Flowers bright yellow, about $\frac{1}{4}$ inch across, with the sepals spreading. Fruit pedicels spreading horizontally or a little deflexed, from $\frac{1}{4}$ to $\frac{5}{8}$ inch long. Pods, including the style, about $\frac{1}{4}$ inch long; the length of the valves not exceeding twice their breadth, and sometimes less. Seeds small, roundish oblong, somewhat angular, slightly compressed, reddish brown, punctured. Whole plant dark green, glabrous.

This and the last species have been separated from the other plants of the genus on account of the pod being a silicula rather than a siliqua; but the division is an unnatural one, and has no such convenience to recommend it as that attending the division of the Cruciferæ into Siliquosæ and Siliculosæ.

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* The Plate is E. B. 1840, with pods added by Mr. J. E. Sowerby.

Great Yellow Cress, Great Water Rocket or Radish,
Amphibious Yellow Cress.

French, *Cresson Amphibie.*

Section III.—SILICULOSÆ.

Fruit a silicula, not more than three or four times as long as broad, ovoid or oblong, usually compressed, not divided by transverse partitions, generally opening when ripe by two valves which split away from the replum, rarely indehiscent.

Sub-Section I.—LATISEPTÆ.

Pod compressed parallel to the replum, so that the latter lies in the greatest transverse diameter of the pod; or not compressed, in which case the diameter of the pod measured from edge to edge of the valves is not conspicuously less than that taken from the back of one to the back of the other.

Tribe VII.—ALYSSINEÆ.

Cotyledons flat, generally with the radicle lying along their edges on one side (accumbent). Pod short and broad, more or less compressed parallel to the replum, or slightly compressed at right angles to it, opening by 2 flat or convex valves.

GENUS XIV.—COCHLEARIA. *Linn.*

Sepals short, somewhat spreading, equal at the base. Petals equal, entire, with short claws. Filaments without wings or teeth. Pod globular or ovoid; valves extremely convex, with or without a dorsal nerve; replum sometimes perforated; style short or elongated. Seeds few or numerous, obovate or oblong, compressed, not winged, usually arranged in 2 rows in each cell of the pod.

Glabrous herbs, with the flowers commonly white, arranged in corymbs or short racemes, which afterwards elongate.

The generic name comes from *cochleare*, a spoon, from the form of the root leaves.

Sub-Genus I.—ARMORACIA. *Fl. der Wett.*

Valves without a dorsal nerve.

French, *Cranson.* German, *Meerrettig.*

The name of this genus is of Celtic origin, from *ar*, near, *mor*, the sea, *rich*, against; that is to say, a plant growing near the sea.

SPECIES I.—COCHLEARIA ARMORACIA. *Linn.*

PLATE CXXIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XVII. Fig. 4262.
Armoracia rusticana, "Fl. der Wett." *Bab.* Man. Brit. Bot. ed. v. p. 30. *Hook. & Arn.* Brit. Fl. ed. viii. p. 29.
Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 71.
Roripa rusticana, *Gr. & Godr.* Fl. de Fr. p. 127.

Root perennial, thickened, fleshy. Stem with numerous ascending branches on the upper part. Radical leaves sub-coriaceous, on long stalks, oblong, crenate or serrate; stem leaves on short stalks or sessile, elliptical or strap-shaped, the lower ones often pinnatifid, but they sometimes resemble the uppermost ones in being only crenate or serrate. Pods (very rarely perfected) ovoid; style very short.

By the sides of rivers, in ditches, and in waste places. Not unfrequent both in England and Scotland, but only where it has escaped from cultivation.

[England, Scotland, Ireland]. Perennial. Spring, Summer.

Rootstock thick and fleshy, appearing to be a continuation of the root, emitting subterranean stolons. Stems erect, stout, tough, striated, 2 to 3 feet high or even more, much branched in the upper part; the branches ascending, erect, slender, the uppermost leafless. Radical leaves very large, often a foot or more long, ovate or oval-oblong, generally unequal at the base; stem leaves much smaller and narrower, attenuated towards the base. Flowers white, ⅜ inch across, in a compound flat-topped panicle, each branch of which terminates in a small corymb. Petals about twice as long as the sepals, and with them often persistent on the abortive pods. Pedicels ¼ to ½ inch long. Pods about ⅛ inch long, scarcely twice as long as broad; valves very convex, without a dorsal nerve. Seeds 8 to 12 in each cell of the pod, "ovoid, smooth"† (Gr. & Godr. Fl. de Fr.). Plant dark green, glabrous.

Horseradish.

French, *Cranson de Bretagne, Moutarde des Allemands, Cran de Bretagne.*
German, *Der Gewöhnliche Meerrettig.*

The long rough snail-eaten leaves of the Horseradish are not uncommonly seen on the banks of our rivers, but it is somewhat doubtful whether the plant is a native of our island, or has escaped from some of the gardens where it is so commonly grown as a condiment to our national dish roast-beef. From ancient times it seems to have been valued as a herb medicine, and in the days of Gerarde it was used at table, as we gather from his account of it. He says: "Horseradish, for the most part, groweth and is planted in gardens, yet have I found it wild in sundrie places, as at Nantwich in Cheshire, in a place called the Milne Eye, as also at a small village neare London called Hogsden, in the field next to a farme-house leading to Kingsland, where my very good friend Mr. Bredwel, practitioner in phisicke, a learned and diligent searcher of simples, and Mr. William Martin, one of the fellowship of Barbers Surgeons, my deare and lovinge friende, in company with him, found it and gave me knooledge of the place where it flourishes to this day." He adds: "Horseradish stamped with a little vinegar put thereto is commonly used among the Germans for sauce to eat fish with and suchlike meats as we do mustard; but this kind of sauce doth heat the stomach better, and causeth better digestion than mustard." In the following century it was employed in England as a condiment; for Robert Turner, in his "British Physician," published 1687, after informing us that this herb is "under the dominion of Mars, and is hot and dry in the third degree," says it was eaten with "fish" and "other meats" like mustard. The whole plant contains the essential oil to which its pungency is due, but it abounds chiefly in the root, which was formerly in great repute as a vermifuge for children. Gerarde and Coles both recommend it; Boerhaave speaks highly of it in scurvy; it is also said to have been useful in many chronic disorders, and was employed in dropsies and diseases of the kidneys. Thomas Bertholini affirms that the juice of Horseradish dissolved a calculus of stony concretion that was taken out of the human body. An infusion of the root in cold milk makes one of the safest and best cosmetics. Einhoff discovered that the acrimony of the Horseradish is owing to a volatile oil of a pale yellow colour, and which has the consistence of oil of cinnamon. The liquid obtained from the root gives traces of sulphur by distillation. The tincture deposits crystals of sulphur, which are of a yellow colour, and when exposed to flame exhales a peculiar sulphuric odour; this is no doubt the case with all Cruciferous plants, which contain more or less traces of sulphur in their tissues. The resemblance of the Horseradish root to that of the Monkshood (Aconitum Napellus) has often led to fatal mistakes. The root of the Aconite is much darker than that of Horseradish, and is more given to produce fibrillæ and secondary rootlets.

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* The Plate is E. B. 2323.

† I have never seen mature seeds.

SUB-GENUS II.—EU-COCHLEARIA.

Valves reticulated, with a dorsal nerve.

SPECIES II.—COCHLEARIA POLYMORPHA.*

PLATES CXXX. CXXXI. CXXXII.

Root slender. Stem with a few spreading or ascending branches at the top. Leaves fleshy; the radical ones on long stalks, reniform or roundish, cordate at the base, margin entire or slightly crenate; stem leaves angular or toothed; the uppermost sessile, sub-rhomboidal or oblong, semi-amplexicaul. Pods globular or ovoid, convex above and beneath, more or less acute at the apex, slightly compressed horizontally; valves more or less distinctly reticulated; replum not twice as long as broad; style not one-fourth the length of the pod.

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* I have given this species the name of Polymorpha, as several Linnæan species are combined under it.

SUB-SPECIES I.—**Cochlearia officinalis.** *Linn.*

PLATE CXXX.*

C. officinalis, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XVI. Fig. 4260.
C. officinalis, var. *a*, *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 29.

Radical leaves roundish or reniform, deeply cordate at the base, and generally entire; stem leaves sessile, amplexicaul (except the lower ones which are shortly stalked), angulated, with a few large teeth or lobes, or rarely entire. Pod sub-globular, rounded at the base, slightly and abruptly pointed at the apex.

On muddy shores, and rocks by the sea. Common both in England and Scotland, but apparently more frequent in the latter country.

England, Scotland, Ireland. Biennial or Perennial.
Spring, Summer.

Rootstock generally slender, but in old plants frequently as thick as a man's finger, producing a tuft of radical leaves which generally soon decay, and numerous ascending or decumbent stems which are angular, fleshy, and brittle, 6 inches to 2 feet long, with a few short spreading branches in the upper part. Radical leaves on long stalks, ½ inch to 2 inches in diameter, roundish-reniform, or roundish-deltoid in outline; lower stem leaves generally resembling the radical ones, but on shorter stalks, the greater number of them sessile, and the uppermost quite amplexicaul, generally more or less angulated or toothed, with a tendency to become rhomboidal; all thick and fleshy. Flowers white, sometimes tinged with purple, ¼ to ⅜ inch across. Petals between twice and thrice as long as the sepals. Pedicels about ¼ inch long, ascending or spreading. Pod ⅛ to ¼ inch long, globular, slightly pointed at the apex; valves very convex, with a dorsal nerve and a few prominent veins; style very short. Seeds shortly obovate, flat, deeply punctured, brown, usually 4 in each cell, but sometimes 6. Whole plant deep green, glabrous.

Common Scurvy-Grass.

French, *Cranson Officinal, Herbe aux Cuillers.*

German, *Das Gebräuchliche Löffelkraut, Löffelkresse, Scharbocksheil.*

Like C. Armoracia, the whole of this plant abounds in a pungent oil, obtainable by distillation. When fresh it has a peculiar smell, especially when bruised, and a kind of acrid, bitter taste, which it loses by drying, but which it imparts to water or alcohol. To the presence of this oil are attributed the well-known antiscorbutic properties of the herb: they are more probably due to its mineral constituents. Possibly these virtues have been exaggerated, for although the leaves form a very wholesome salad in the spring, they are not better than those of many other plants, such as the Water-Cress, &c. On the Continent the essential oil has been applied in paralytic cases, and in this country it is said to have been used successfully for rheumatism. Found on most temperate and cold sea-coasts, the Scurvy-Grass was well known to our early navigators as a remedy for the ravages of scurvy, from which our ships' crews suffered so terribly. Captain Cook made extensive use of this and other similar herbs in his expedition to the Southern Seas. The plant is reported to grow luxuriantly on the shores of the islands known as Tierra del Fuego.

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* The Plate is E. B. 551, unaltered.

SUB-SPECIES II.—**Cochlearia alpina.** *Watson.*

PLATE CXXXI.*

C. Groenlandica, *Sm.* Eng. Bot. No. 2403 (non *Linn.*).
C. officinalis, var. alpina, *Bab.* Man. Brit. Bot. ed. v. p. 30.

Radical leaves roundish or reniform, deeply cordate at the base, and entire or faintly crenated; stem leaves sessile, amplexicaul (except the lower ones, which are shortly stalked), angulated, or 3- to 5-lobed. Pod rhomboid-ovoid, attenuated both at the base and apex.

In wet places on mountains. Not unfrequent, occurring on the Welsh mountains, on those in the North of England, and on most of the Scottish mountains.

England, Scotland. Biennial or Perennial. Summer, Autumn.

Extremely like C. officinalis, but usually much smaller, and with the leaves more angulated, sometimes even lobed, and the pod broadest in the middle and tapering towards each end, the length being considerably greater than the breadth.

Mountain Scurvy-Grass.

SUB-SPECIES III.—**Cochlearia danica.** *Linn.*

PLATE CXXXII.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XVI. Fig. 4257.
C. officinalis, var. γ, *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 29.

Radical leaves roundish, deeply cordate at the base, "somewhat lobed" (Bab.); stem leaves mostly stalked, or the uppermost ones sessile and amplexicaul, 3- to 5-lobed, the lateral lobes divaricate in the lower leaves. Pod rhomboid-ovoid, attenuated both at the base and apex.

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* The Plate is E. B. 2403, with pods added by Mr. J. E. Sowerby.

† The Plate is E. B. 696, unaltered.

On sandy and muddy seashores. Not uncommon. In the South of England it is certainly more plentiful than C. eu-officinalis; but I have never seen it in Scotland, though I have often searched for it there. It is, however, reported from many of the counties on good authority.

England, Scotland, Ireland. Annual or Biennial. Spring.

This plant is very closely allied to C. alpina, being about the same size, with the stems 3 to 9 inches long. The stem leaves, however, are more angulated, often somewhat resembling those of the Ivy, and a greater number of them stalked. The pod being ovoid, not globular, will always distinguish it from C. officinalis. I can see no difference between the root leaves of this plant and the last, though they are sometimes said to be hastate, probably from the lower stem leaves being mistaken for root leaves after the decay of the latter, as suggested by Dr. Walker Arnott.

Hastate-leaved Scurvy-Grass.

SPECIES III.—COCHLEARIA ANGLICA. *Linn.*

PLATE CXXXIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XVI. Fig. 4258.

Root slender. Stem with a few ascending branches at the top. Leaves fleshy; the radical ones on long stalks, oblanceolate, oblong, oval, or ovate, attenuated or rarely rounded (but never cordate?) at the base, the margins entire or slightly waved; stem leaves toothed or nearly entire; the upper ones sessile, rhomboidal-oblong or strap-shaped, semi-amplexicaul. Pod obovate or oval, flattish above, convex beneath, slightly tapering towards the base, and generally obtuse at the apex, much compressed horizontally; valves distinctly reticulated; replum four to six times as long as broad; style about one-fourth the length of the pod.

On muddy salt marshes, and between the stones of embankments by the sea, and especially on the shores of tidal rivers. Common in England, but apparently very rare in Scotland, where Dr. Walker Arnott mentions it as growing on the banks of the Cree, in Wigtonshire. It has been reported from several other Scotch counties, but no specimens from Scotland have ever come under my notice.

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* The Plate is drawn by Mr. J. E. Sowerby from a specimen gathered by the Thames side near Greenwich.

England, Scotland, Ireland. Perennial or Biennial.
Spring and Early Summer.

In general habit this species comes near C. officinalis, but grows in denser tufts, with more numerous, stiffer, and more erect stems, from 3 inches to 1 foot high. The radical leaves, although variable in form, are never, so far as I have seen, cordate at the base; usually they taper gradually into the footstalk, being very rarely abrupt; the stem leaves are also longer and narrower. The flowers are considerably larger, being often ½ inch across. The fruit pedicels are at first ascending, but when quite ripe are often spreading, or even slightly deflexed. The pod is much larger, being (without the style) from ⅜ to ½ inch long, and more flattened at right angles to the replum; the valves more strongly reticulated, and often so turgid that the fruit often becomes didymous, there being a great constriction in the pod at the narrow replum, when it is var. gemina of the Rev. F. J. A. Hort, who first noticed this plant near Chepstow; but this form is also abundant in the Isle of Sheppey. Seeds oblong-oval, reddish brown, punctured, usually 4 in each cell of the pod. The fruit of this plant really resembles that of the section Angustiseptæ, while the previous forms have the fruit of the Latiseptæ. It is said sometimes to have the radical leaves cordate at the base, and if so, it may possibly be only another sub-species of C. polymorpha.

Long-leaved Scurvy-Grass.

GENUS XV.—**DRABA.** *Linn.*

Sepals short, somewhat spreading or erect, generally equal at the base. Petals equal, entire, notched or bifid, with short claws. Filaments without wings or teeth. Pod oval, elliptical, or oblong, much compressed parallel to the replum, rarely ovoid and not compressed; valves slightly (rarely extremely) convex, with a dorsal nerve, and frequently a dorsal furrow. Style short or elongated. Seeds few or numerous, oval, compressed, not winged, arranged in 2 rows in each cell of the pod.

Small herbs, often clothed with stellate pubescence. Radical leaves generally in a rosette. Flowers white or yellow, rarely purple, arranged in corymbs or short racemes, which generally afterwards elongate.

French, *Drave.* German, *Hungerblümchen.*

According to some authors, the name is derived from the word Δράβη, Arabian mustard; according to Linnæus, it comes from δραβη (*drabe*), acrid, biting, from the taste of the leaves.

SUB-GENUS I.—EROPHILA. *D. C.*

Petals bipartite. Seeds numerous.

SPECIES I.—DRABA VERNA. *Linn.*

PLATE CXXXIV.

Scape leafless. Radical leaves oblanceolate, toothed or entire, hairy. Petals deeply cloven. Raceme elongating after flowering. Pedicels ascending-spreading, much longer than the pods. Pods ovoid, generally compressed. Style almost none.

Common Whitlow Grass or Cress, Nailwort.

French, *Drave Printanière.*

Among mediæval herbalists there was a great discussion as to whether this plant or some allied species was the true Whitlow Grass of the still more ancient herb doctors; but modern writers on Medical Botany have slighted the plant and all inquiries respecting it. The leaves were certainly used by old practitioners in the form of a poultice as an application to whitlows.

SUB-SPECIES I.—Draba eu-verna.

PLATE CXXXIV. FIG. 1.*

D. verna, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XII. Fig. 4234.
Erophila vulgaris, *D. C.* Syst. Vol. II. p. 356.
Erophila glabrescens (?), hirtella, stenocarpa, and majuscula, *Jord.* Pug. Pl. Nov. pp. 10, 11; and *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 64.

Pods oval-elliptical, twice or more times as long as broad, slightly narrowed towards each extremity but more so at the base, compressed. Seeds 20 to 40 in each cell of the pod.

On wall tops and dry banks and rocks. Very common.

England, Scotland, Ireland. Annual or Biennial. Spring.

No rootstock. Stems numerous, 1 to 8 inches high, erect or ascending, often curved at the base, slender, flexuous, generally simple. Radical leaves in a rosette, spreading, narrowed towards the base but not distinctly stalked, entire or with a few teeth on the edges. Flowers white, $\frac{1}{8}$ to $\frac{1}{4}$ inch across. Petals obovate-oblong, once and a half to thrice as long as the sepals, divided into 2 lobes by a sinus extending rather more than half way down. Fruit pedicels ascending-spreading, $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Pod varying in length, but always twice as long as broad and often three or four times as long, from about $\frac{1}{8}$ to $\frac{3}{8}$ inch in length. Seeds very minute, reddish brown, oval, finely punctured. Plant greyish green, more or less thickly clothed with stellately branched hairs.

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* The Figure is E. B. 586.

Mons. Jordan has described several distinct forms of this plant, which are enumerated above as synonyms; but a comparison of authenticated specimens of these leads me to believe that they cannot be separated, with the exception of Erophila glabrescens (Jordan), the pod of which is intermediate between that of typical D. eu-verna and D. brachycarpa; but the habit of E. glabrescens agrees better with that of D. eu-verna, and it seems preferable to refer it to that sub-species until continued cultivation has proved it to belong to one or the other, or that these two are merely varieties, and E. glabrescens the connecting link between them. I have found a plant, apparently identical with E. glabrescens, by the side of the Thames above Richmond.

SUB-SPECIES? II.—**Draba brachycarpa.** *Jord.* (sub EROPHILA).

PLATE CXXXIV. FIG. 2.*

D. præcox, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XII. Fig. 4233 ("non *Sten.*" *Jord.*).
D. verna, var. *β*, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 70.

Pods roundish ovate or sub-orbicular, once and a quarter to once and a half as long as broad, scarcely narrowed towards the base, and obtuse at the apex, compressed. Seeds 12 to 20 in each cell of the pod.

On walls, etc., in Yorkshire, and probably elsewhere.

England. Annual or Biennial. Spring.

This plant differs very little from the last except in the pod, but it seldom attains so great a size, being rarely more than 3 inches. The style is more distinct, and the leaves are more attenuated towards the apex; the fruiting pedicels closer together, and more spreading. Pods from $\frac{1}{8}$ to $\frac{1}{6}$ inch long, and not nearly twice as long as broad. Mons. Jordan says that specimens of D. præcox (Sten.) in De Candolle's Herbarium do not belong to the present plant. There can be no doubt, however, that Reichenbach's figure under that name represents D. brachycarpa, a name which is here retained on account of the uncertainty attached to D. præcox. It is very possible that this plant may be merely a variety of D. eu-verna.

Common Whitlow Grass.

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* Drawn for the present edition by Mr. J. E. Sowerby. The specimen is from Yorkshire.

SUB-SPECIES III.—**Draba inflata.** *Watson.*

PLATE CXXXIV. FIG. 3.*

D. verna, var. β, *Hook. & Arn.* Brit. Fl. ed. viii. p. 30.

Pods oval-ovoid, about twice as long as broad, not compressed, narrowed in a regular curve towards the base and the apex; valves convex. Seeds 20 to 40 in each cell of the pod.

On rocks and rocky débris on Stuich-an-Lochan, close to Ben Lawers, Perthshire, on the north side of Loch-na-Gat. Mr. Baker mentions a plant near Thirsk which he believes to be the same as the Ben Lawers plant.

England? Scotland. Annual or Biennial. Summer (in the Perthshire locality).

The remarkably inflated pods of this form distinguish it from the two preceding. It approaches nearest to the Erophila glabrescens of Jordan, but the pods are smaller, being about ⅛ inch long, as well as swollen, the petals less deeply bifid, and the seeds paler and yellowish brown. The stems are from 3 to 6 inches high, and nearly glabrous except towards the base.

Seeds of this plant, brought from Ben Lawers in 1851, were sown in Mr. Watson's garden, and the plant has been there maintained in cultivation to the present time without showing any alteration in the shape of the pods, in this agreeing with the observations of Sir William Hooker.

SUB-GENUS II.—EU-DRABA. *Gr. & Godr.*

Petals entire or only slightly notched. Seeds numerous.

SPECIES II.—**DRABA MURALIS.** *Linn.*

PLATE CXXXV.†

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XII. Fig. 4235.

Stem branched, with rather distant leaves, pubescent except at the summit. Radical leaves obovate or oblanceolate; stem leaves ovate, amplexicaul; all sharply toothed (especially those on the stem) and hairy. Petals entire, rounded at the apex. Raceme elongating much after flowering. Pedicels spreading, nearly twice as long as the pods. Pods elliptical, compressed, not twisted. Style, almost none.

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* Drawn from a Ben Lawers specimen by Mr. J. E. Sowerby.

† The Plate is E. B. 912, unaltered.

On rocks in the West of England. Rare. Reported from the counties of Somerset, Stafford, Montgomery, Westmoreland; but I have only seen specimens from Malham, Yorkshire; and from Matlock, Derbyshire. Naturalized at Comely Green, near Edinburgh; and at Forfar. It occurs also in Ireland, at Blarney Castle.

England, [Scotland,] Ireland. Annual or Biennial? Spring.

No rootstock. Stem solitary, erect, 4 to 12 inches high, with a few ascending branches. Radical leaves forming a rosette, obovate or oblanceolate, narrowed at the base but scarcely stalked, generally toothed; stem leaves (except the lowest) amplexicaul, with triangular auricles, and coarsely serrate. Flowers in a short raceme, white, about $\frac{1}{10}$ inch across. Sepals oblong, purplish, with a few hairs or glabrous. Petals narrow, entire, twice as long as the sepals. Fruit pedicels $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Pods about $\frac{1}{5}$ inch long, about three times as long as broad. Seeds 6 or 8 in each cell, very minute, oval, compressed, finely punctured. Plant greyish green; the leaves with scattered, simple and stellate hairs; lower part of the stem densely clothed with stellate hairs, which become more remote towards the top, until the axis of the raceme and peduncles are glabrous.

Wall Whitlow Grass, Speedwell-leaved Whitlow Grass.

French, *Drave des Murs.*

SPECIES III.—DRABA INCANA. *Linn.*

PLATE CXXXVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XIV. Fig. 4249.

Stem branched, with rather distant leaves, densely pubescent. Radical leaves elliptical or oblanceolate; stem leaves sessile, scarcely at all amplexicaul, elliptical, lanceolate, or ovate; all hairy and ciliated, generally with a few very prominent serratures or small projecting lobes. Petals slightly notched at the apex. Raceme elongating much after flowering. Pedicels ascending, erect, shorter than the pods. Pods elliptical or linear-elliptical, compressed, twisted on their axis when mature, glabrous, or rarely with stellate hairs; style almost none; stigma not distinctly notched.

On rocks and mountainous districts, and on sandy moors near the sea in the North of Scotland. It occurs on the Welsh, Derbyshire, Yorkshire mountains, and those of the Lake district, and is plentiful on most of the higher Scotch mountains, as far north as Orkney and Shetland. It is abundant on the dry waste flat called Morich More, near Tain, Ross-shire, nearly on the level of the sea, but is very small in that locality.

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* The Plate is E. B. 388, with a small form added by Mr. J. E. Sowerby.

England, Scotland, Ireland. Perennial or Biennial.
Summer, Autumn.

Rhizome slender, woody, generally branched, producing rosettes of spreading leaves, some of which are barren. Stem from the centre of a rosette, 3 inches to 2 feet high, with ascending or spreading branches in large specimens. Radical leaves narrowed at the base, but scarcely stalked, generally with a few short narrowly triangular projecting lobes; stem leaves rounded at the base, generally broader than the radical leaves, which are usually decayed by the time the pods begin to form; the uppermost, which are the broadest, having sometimes short auricles. Flowers white, about $\frac{1}{8}$ inch across. Petals rather more than twice as long as the sepals, obovate with a small notch at the apex so as to be obcordate. Fruit pedicels $\frac{1}{12}$ to $\frac{3}{8}$ inch long. Pods $\frac{1}{4}$ to $\frac{1}{2}$ inch long, twice and a half to six times as long as broad, usually making one complete turn upon its own axis, but sometimes only half a turn; style scarcely longer than broad. Seeds very numerous, pale reddish brown, ovate, scarcely compressed, very finely punctured. Whole plant greyish or whitish green; the leaves more or less covered with stellate and simple hairs, and ciliated at the edges. Stem and axis of the raceme and pedicels white, on account of the close covering of short hairs.

The form with stellate hairs on the pods, D. confusa (Ehrh. non Reich.), appears to be scarce in Britain, as the only specimen I have seen of it is one from the Botanical Society of Edinburgh, labelled "Clova, Forfar. Dr. Balfour, 1846."

Hoary Whitlow Grass, Woolly Whitlow Grass, Twisted-podded Whitlow Grass.

French, *Drave Blanchâtre.*

SPECIES IV.—DRABA RUPESTRIS. *R. Brown.*

PLATE CXXXVII.*

D. hirta, *Sm.* Eng. Bot. No. 1388 (non *Linn.*).

Stem simple, leafless or with a single leaf, hispid. Radical leaves narrowly elliptical- or strapshaped-oblanceolate; stem leaf (if present) ovate-lanceolate, sessile; all hairy and ciliated, generally entire. Petals slightly notched at the apex. Raceme elongating only a little after flowering. Pedicels erect, shorter than the pods. Pods elliptical or oval-elliptical, compressed, not twisted on their axis, with scattered forked hairs; style none; stigma distinctly notched.

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* The Plate is E. B. 1338. In the first issue of this Edition the pods were represented too short and broad, and had the hairs omitted. The Plate is now correct.

On damp rocks on high mountains. Very rare. It grows on Ben Lawers, near the summit, and was found by the late Dr. Graham on Catjaghiamman, near Killin, Perthshire. It has been also gathered on Cairngorm, at the junction of the counties of Aberdeen, Moray, and Inverness, and on Ben Hope in Sutherland. A specimen in the Hookerian Herbarium is labelled "Ingleborough" in the handwriting of Sir William J. Hooker.

Scotland, England? Perennial. Summer.

This species bears some resemblance to small specimens of D. incana; but the rootstock is much more branched, and produces a greater number of barren tufts of leaves, which are also less perfectly disposed in rosettes, from the internodes being usually a little more developed. The leaves are generally much narrower, less hairy on the surfaces, and more distinctly ciliated. The stem is generally bare of leaves, and scarcely ever has more than one, and the hairs on the stem and pedicels are more distant, and on the latter much longer. The flowers are fewer, white; the sepals narrower, and almost glabrous; and the petals are not quite so long as in D. incana; the fruiting raceme is also less elongated, the pods never twisted, and always with stellate pubescence upon them. Fruit pedicels about $\frac{1}{8}$ inch long. Pods about $\frac{1}{4}$ inch long, twice or thrice as long as broad. The seeds are very similar to those of D. incana, but smaller.

Rock Whitlow Grass.

French, *Drave des Rochers.*

SPECIES V.—DRABA AIZOIDES. *Linn.*

PLATE CXXXVIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XV. Fig. 4254.

Stem simple, leafless, glabrous. Radical leaves rigid, linear or strap-shaped, pointed, keeled, entire, with cartilaginous points terminating in bristles at the edges, but the surfaces glabrous. Petals very faintly notched at the apex. Raceme elongating a little after flowering. Pedicels spreading, conspicuously longer than the pods. Pods elliptical-lanceolate, compressed, not twisted; style as long as the diameter of the pod.

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* In the Plate E. B. 1271 the leaves were not sufficiently spreading, and the hairs were obliterated in transferring the plate to the stone. A new Plate has now been engraved.

Very rare. On rocks at Pennard Castle, and at the Worm's Head, Glamorganshire.

England. Perennial. Spring.

Rhizome slender, branching, producing dense cushion-like tufts. Leaves spreading in very compact rosettes, much narrower and more rigid than in any other British species of this genus. Stems 2 to 6 inches high. Flowers bright yellow, $\frac{3}{8}$ inch across. Fruit pedicels $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Pod, exclusive of style, $\frac{1}{4}$ to $\frac{3}{8}$ inch long, rather more than twice as long as broad, acute at the apex, and terminated by the long straight style. Seeds about 10 or 12 in each cell of the pod, yellowish brown, larger than those of any of the other British species of Draba, being about $\frac{1}{16}$ inch long. Leaves dark green, somewhat shining.

The leaves of this plant remain for a long time after they wither, so that the rosette is surrounded by numerous rows of dead leaves, giving to the old stems somewhat the appearance of a bottle-brush.

Sea-green Whitlow Grass, Yellow Alpine Whitlow Grass.

French, *Drave, Faux Aizoon.*

GENUS XVI.—ALYSSUM. *Linn.*

Sepals short, erect, or somewhat spreading, equal at the base. Petals equal, entire, notched or bifid, with short claws. Filaments or some of them very often with wings or appendages. Pod roundish, obovate, oval, elliptical or rhomboidal, compressed parallel to the replum; valves flattish, convex, or convex in the centre only, often without a dorsal nerve; style short or elongated. Seeds 2 to 10, oval, compressed.

Branched herbs or undershrubs, generally thickly covered with stellate or (more rarely) simple hairs. Leaves generally narrow, entire. Flowers white or yellow, arranged in corymbs or short racemes, which generally afterwards elongate.

The name of this genus is derived from the Greek words α, negative, and λύσσα (*lussa*), canine madness, because it was supposed to be a cure for madness.

SUB-GENUS I.—EU-ALYSSUM.

Petals small, entire, or slightly notched. Filaments, or at least some of them, winged or toothed. Pod lenticular. Cells 2- or 1-seeded.

SPECIES I.—ALYSSUM CALYCINUM. *Linn.*

PLATE CXXXIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XVIII. Fig. 4269.

Whole plant covered with stellate hairs. Calyx persistent. Petals strap-shaped, truncate, or slightly notched at the apex. Filaments not winged, but the shorter ones with 2 long setaceous processes at the base. Pod sub-orbicular, notched at the apex; style not exceeding the depth of the notch; valves convex in the centre, depressed all round the margin, without a dorsal nerve. Raceme much elongated in fruit. Pedicels patent-ascending, about equal to the pods.

In clover and grass fields and ploughed land. Rather rare, and probably introduced with Continental seed. In England it has occurred in the counties of Devon, Hants, Herts, Essex, Norfolk, Cambridge, Leicester, and York. In Scotland, near St. Boswells, Roxburghshire; Dirleton, Haddington; Pettycur and Queensferry, Fife; and near Arbroath, Forfarshire.

[England, Scotland]. Annual. Summer.

Stem almost woody, dividing near the base into numerous nearly simple branches 3 to 9 inches long. Leaves scattered on the stem, sessile, oblanceolate or strap-shaped, and attenuated at the base. Flowers about $\frac{1}{8}$ inch across. Sepals erect, covered with stellate down, and having long woolly hairs at the summit remaining until the fruit is ripe. Petals erect, about twice as long as the sepals, very narrow, pale ochreous yellow, turning white and remaining in a faded condition until the pod is nearly full-sized, but not so persistent as the sepals. Filaments all slender, the two short ones each with a pair of appendages resembling barren filaments springing from their bases, and about half their length. Pedicels $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Pods dotted with stellate pubescence, about $\frac{1}{8}$ inch long, nearly circular, or very shortly ovate, with a broad shallow notch at the tip. Seeds 1 or 2 in each cell, obovate, reddish brown, punctured, surrounded by a pale narrow wing. Plant having a greyish or whitish tint from the close white stellate pubescence.

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* The Plate is E. B. S. 2853, unaltered.

Calycine Alyssum, Large-calyxed Madwort.

French, *Alysson à Calices Persistans.* German, *Kelchfrüchtiges Schildkraut.*

SUB-GENUS II.—LOBULARIA. *Desv.*

Petals obovate, entire. Filaments without appendages. Pod ovoid, compressed. Cells 1- to 6-seeded.

SPECIES II.—ALYSSUM MARITIMUM. *Lamarck.*

PLATE CXL.*

Koniga maritima, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XVIII. Fig. 4266.
Alyssum maritimum, *Sm.* Eng. Bot. No. 1729; and Brit. Fl. Vol. III. p. 162. *Benth.* Handbook Brit. Fl. p. 94. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 118.
Lobularia maritima, *Desv.* Journ. Bot. Vol. III. p. 162. *Koch,* Syn. Fl. Germ. et Helv. ed. ii. p. 65.
Koniga maritima, *R. Brown. Bab.* Man. Brit. Bot. ed. v. p. 29. *Hook. & Arn.* Brit. Fl. ed. viii. p. 30.
Glyce maritima, *Lindley,* Syn. Brit. Fl. p. 26.

Whole plant covered with adpressed bipartite hairs, resembling simple hairs attached by their middle. Calyx not persistent. Petals spatulate, with a sub-orbicular entire limb. Filaments all without wings or processes. Pod globular-ovoid, a little attenuated towards the base, acute at the tip; style about a quarter as long as the pod; valves slightly convex, with a dorsal nerve. Raceme slightly elongated in fruit. Pedicels spreading, twice or thrice the length of the pod.

On walls and waste places near the sea, but only where it has escaped from cultivation. I have seen specimens from Budleigh Salterton, Boweysand, and Stonehouse, Devonshire; Weston-super-Mare, Somerset; Folkestone, Kent; Felixtowe, Suffolk; Darsley, Gloucester; Montrose Links, Forfarshire; and it has been also reported from several other places.

[England, Scotland]. Annual or Perennial. Summer, Autumn.

Stem almost woody, dividing near the base into several branches, which are again branched, and from 4 to 12 inches long. Leaves scattered on the stem, sub-sessile, narrowly elliptical or strap-shaped, attenuated towards the base, and more abruptly so towards the tip. Flowers white, about $\frac{1}{4}$ inch across. Sepals deciduous, slightly spreading, with adpressed hairs similar to those of the rest of the plant throughout. Petals nearly twice as long as the sepals, with a large nearly circular spreading limb. Pedicels $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Pod, without the style, about $\frac{1}{10}$ inch long, rhomboidal, roundish, with the valves slightly convex. Seeds 1 in each cell, roundish-ovate, compressed, pale reddish brown, very finely punctured, surrounded by a white membranous wing. Plant greyish green, the young leaves and shoots silky in appearance from the white adpressed hairs.

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* The Plate is E. B. 1729, unaltered.

Sweet Alyssum, Seaside Alyssum.

French, *Alysson Maritime.* German, *Meerstand's Schildkraut.*

TRIBE VIII.—CAMELINEÆ.

Cotyledons flat (*i. e.* bent over close to the base), with the radicle lying on the back of one of them (incumbent); or bent over in the middle, the lower portion being in the same line as the radicle, the upper lying against the radicle, which is on the back of one of them. Pod short and broad, more or less compressed parallel to the replum, or slightly compressed contrary to it, opening by 2 convex valves.

GENUS XVII.—CAMELINA. *Crantz.*

Sepals short, erect, nearly equal at the base. Petals equal, entire, with short claws. Filaments without wings or appendages. Pods obovate or turbinate, slightly compressed parallel to the replum. Valves with a dorsal nerve, and very convex in the middle, depressed round the margins, abruptly terminated by a linear-acute point, which is applied to the base of the long persistent style. Seeds numerous, in two rows, oblong-ovoid, not winged. Embryo with the cotyledons folded over at the base, where they are joined to the radicle.

Erect annual herbs, glabrous or clothed with forked pubescence. Upper stem leaves sagittate at the base, with acute divaricate auricles.

This generic name is derived from the Greek words χαμαι (*chamai*), on the ground, and λινον (*linon*), flax, that is to say, dwarf flax, to which it bears resemblance.

SPECIES I.—CAMELINA SATIVA. *Crantz.*

PLATES CXLI. CXLII.

Myagrum sativum, *Linn.*

Pod obovate, margined; valves very convex.

SUB-SPECIES I.—Camelina eu-sativa.

PLATE CXLI.*

C. sativa, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXIV. Fig. 4292.
"C. macrocarpa, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXII. Fig. 4294, β," *Fries.*
C. sativa, *Fries,* Mant. III. p. 72. *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 130. *Boreau,* Fl. du Centre de la Fr. ed. iii. Vol. II. p. 62. *Coss.* & *Germ.* Fl. des Environs de Paris, ed. ii. p. 124. *Godr.* Fl. de Lorr. ed. ii. Vol. I. p. 70.
Alyssum sativum, *Sm.* Eng. Bot. No. 1254.

Pods obconical-obovate, rounded at the apex; valves hard, brittle, with a well-marked dorsal nerve.

In flax fields, etc. Occasionally found throughout Britain, but cannot even claim to be a naturalized plant, being introduced with foreign seed, and not having permanently established itself in any one locality.

[England, Scotland]. Annual. Summer.

Stem erect, 1 to 2½ feet high, branched in the upper part. Lower leaves oblanceolate, attenuated at the base; upper leaves sub-amplexicaul, lanceolate or narrowly elliptical; the base produced into two short acute auricles, the apex acute; the margin nearly entire, slightly toothed, or rarely pinnatifid. Flowers ⅛ inch across, yellow. Sepals glabrous, with a membranous margin; petals one-half longer than the sepals, erect, spatulate; raceme much elongated in fruit; pedicels ascending, ½ inch to 1 inch long. Pods about ⅜ inch long exclusive of the style, which is about equal in length to half the greatest width of the pod, pale yellowish olive-colour when ripe; valves reticulated, very convex except round the margins, where the two valves are parallel to each other, so that the pod looks as if it were surrounded by a wing. Seeds numerous, small, slightly roughened, pale yellowish brown. Plant glabrous, or slightly hairy with forked hairs. Professor Babington says that he has not seen C. sativa (Fries) in Britain, but I possess specimens collected at Sandhutton, north-west Yorkshire, by Mr. Foggitt; and although the figure in English Botany, No. 1254, is not characteristic, it must be referred to the present plant on account of the shape of the pods. It was taken from a specimen found in Lakenheath field, by Wangford, Suffolk.

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* The Plate is E. B. 1254, with pod added by Mr. J. E. Sowerby from a Yorkshire example.

Cultivated Gold of Pleasure.

French, *Caméline Cultivée.* German, *Gebauter Leindotter.*

The specific name of this plant signifies *sat*, or cultivated; and it is said that the common name Gold of Pleasure bears ironical reference to the disappointment of its first cultivators, who found their investment about as profitable as "gold" spent on "pleasure" usually proves. It has long been cultivated in Germany and France for the sake of its seeds, and it has lately been introduced here with the same object, but with no great results. The seeds yield an oil which soon turns rancid, and does not burn well; it is chiefly used by soap-makers. The cake left after the oil is expressed has been used as food for cattle like linseed-cake, but is very inferior to it. Birds are fond of the seeds, and domestic poultry, such as geese, fatten quickly on them.

SUB-SPECIES II.—**Camelina fœtida.** *Fries.*

PLATE CXLII.*

C. dentata, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XXIV. Fig. 4294.
C. fœtida, *Bab.* Man. Brit. Bot. ed. v. p. 31. *Fries*, Mant. III. p. 70. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 131. *Godr.* Fl. de Lorr. ed. ii. Vol. I. p. 70.
C. dentata, "Pers." *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 62.

Pods obovate, truncate at the apex; valves somewhat leathery, with a very indistinct dorsal nerve.

In flax fields and on ballast hills. More frequent than C. eu-sativa, but with no stronger claims to be considered as even a naturalized plant.

[England, Scotland]. Annual. Summer.

Very like C. eu-sativa, but having the fruiting raceme shorter; the pods shorter, broader, and less perfectly wedge-shaped in profile, dark olive when ripe, the valves dimpling on pressure without breaking, the dorsal nerve much less distinct. The seeds are also larger, darker, and more distinctly punctured; the petals paler yellow, and the branches of the stem do not form so distinctly a panicle when in fruit. The lower leaves are often pinnatifid.

Fetid Gold of Pleasure.

French, *Caméline Dentée.* German, *Gezähnter Leindotter.*

GENUS XVIII.—SUBULARIA. *Linn.*

Sepals short, spreading, equal at the base. Petals equal, entire, without distinct claws. Filaments without wings or appendages. Pods oval- or elliptical-ovoid, slightly compressed at right angles to the plane of the replum, narrowed at the base so as almost to appear stalked; valves with a dorsal nerve, and very convex throughout; stigma sessile. Seeds 2 to 6 in each cell of the pod, ovoid, compressed, not margined. Embryo with the cotyledons folded over on themselves above the base.

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* Drawn by Mr. J. E. Sowerby from a specimen collected at Virginia Water.

A genus consisting of a single species, described below.

The name of this genus is derived from *subula*, an awl, from the form of the leaves.

SPECIES I.—SUBULARIA AQUATICA. *Linn.*

PLATE CXLIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XII. Fig. 4232.

Leaves all radical, awl-shaped.

On the gravelly bottoms of lakes in mountainous districts, growing completely under water. Carnarvonshire and Anglesea seem to be the only English localities. In Scotland it is more abundant, occurring in Loch Skew, Dumfries-shire; Loch of Drum, near Aberdeen; and in many of the Highland lakes as far north as Ross-shire and Sutherlandshire.

England, Scotland, Ireland. Perennial. Late Summer, Autumn.

Root of numerous pure white fibres. Radical leaves in tufts, 1 to 2½ inches long, tapering gradually from the base to the apex. Scapes 2 to 4 inches high, extremely short and almost hidden amongst the leaves while in flower. Flowers few, white, about $\frac{1}{10}$ inch across. Fruiting raceme lax. Pedicels ascending, ⅛ to ⅜ inch long. Pod about ⅛ inch long, with the breadth generally about half the length. Seeds yellowish brown, punctured. The embryo presents a difference from that of the other Camelineæ, inasmuch as the cotyledons are not bent over close to the point where they join the radicle, but some distance above it, so that the lower part of the cotyledons is in a continuous line with the radicle, and it is only their upper portion which is folded over so as to bring the back of one of them against the radicle. Plant dull green, glabrous; the leaves somewhat fleshy.

Water Awlwort, Common or Aquatic Awlwort.

French, *Subulaire Aquatique.*

This interesting little native ought to be in every aquatic garden. If planted in a pot of gravel with a little clay and sunk in a quiet pond it will grow readily, and then presents the curious phenomenon of a flower in full bloom under water.

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* The Plate is E. B. 732, with embryo added by Mr. J. E. Sowerby.

SUB-SECTION II.—ANGUSTISEPTÆ.

Pod compressed at right angles to the direction of the replum, so that the latter lies in the least transverse diameter of the pod, the width of which is much greater when measured from the back of one valve to the back of the other, than when taken from edge to edge, owing to the extreme convexity of the valves, which are often keeled or winged.

TRIBE IX.—THLASPIDEÆ.

Cotyledons flat, with the radicle lying along their edges on one side (accumbent). Pod short and broad, compressed at right angles to the direction of the replum, generally opening by two convex valves, usually with a keel or wing down the central line of the back, or part furthest from the replum.

GENUS XIX.—THLASPI. *Linn.*

Sepals sub-erect or spreading, equal at the base. Petals equal, entire or slightly notched. Filaments without wings or appendages. Pods much compressed at right angles to the replum, obovate, oblong-obovate, or orbicular; apex emarginate, notched, or obcordate; valves keeled down the back, the keel produced into a wing, most developed towards the apex; style short or elongated. Seeds lenticular, not winged, 2 to 8 in each cell of the pod.

Herbs, generally glabrous and glaucous. Radical leaves attenuated at the base; stem leaves hastate-sagittate, or cordate, amplexicaul. Flowers white, rose-coloured, or purple, in short racemes which afterwards elongate.

The generic name is derived from θλάω (*thlao*), to compress, to break,—in reference to the compressed seeds, according to some authors; others give the derivation from the fact that the seeds were broken or compressed, and used like mustard.

SPECIES I.—THLASPI ARVENSE. *Linn.*

PLATE CXLIV.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. V. Fig. 4181.

No rootstock. Stem leaves hastate-sagittate at the base. Pods (including the wings) sub-orbicular, obcordate with a deep sinus at the apex where the two lobes of the wings are contiguous or slightly overlapping at the tips; wing gradually increasing in width from the base (where it begins abruptly) to the apex; style extremely short, not nearly so long as the lobes of the wings. Seeds 5 to 8 in each cell of the pod, irregularly ovoid-lenticular, with raised concentric ridges.

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* The Plate is E. B. 1659, unaltered.

A weed in cultivated fields. Rather rare, but generally distributed throughout Britain.

England, Scotland, Ireland. Annual. Summer, Autumn.

Stem erect or ascending, 1 to 2 feet high, simple or slightly branched. Lowest leaves oblanceolate or obovate, attenuated at the base so as to be almost stalked; the rest of the leaves oblong, lanceolate, or elliptical, produced at the base into 2 acute diverging auricles, the margins in all remotely toothed or entire. Flowers white, about $\frac{1}{6}$ inch across. Petals about half as long again as the sepals, spatulate, truncate, or faintly emarginate at the apex. Fruiting raceme long. Pedicels spreading, $\frac{3}{8}$ to $\frac{3}{4}$ inch long. Pods nearly flat, $\frac{3}{4}$ to $\frac{7}{8}$ inch in diameter including the wing, or excluding it $\frac{1}{2}$ to $\frac{5}{8}$ inch long by about $\frac{3}{8}$ inch broad, so that were the pod not winged its shape would be oval or obovate-oblong; wing with a fine marginal nerve running round the edge. Seeds very dark brownish black, punctured, and also with 4 or 5 concentric ridges on each face. Whole plant glabrous and slightly glaucous.

Field Penny Cress, Mithridate Mustard.

French, *Tabouret des Champs.* German, *Feld-Pfennigkraut.*

When chewed the Penny Cress is slightly acrid, with somewhat of the odour and flavour of onion or garlic; and having been used in sauces, it was called by the general name Mustard. The name "Mithridate" was prefixed to it because Mithridate, king of Pontus, was a famous mediciner, who compounded poison-resisting draughts and gave them to himself. Many popular medicines have been named after this worthy.

SPECIES II.—THLASPI PERFOLIATUM. *Linn.*

PLATE CXLV.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. V. Fig. 4183.

No rootstock. Stem leaves deeply cordate at the base. Pods (including the wings) deltoid-obovate, obcordate, with a broad triangular sinus at the apex between the two lobes of the wings;

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* The Plate is E. B. 2354, unaltered.

wing gradually increasing in width from a little above the base (where it commences insensibly) to the apex; style short, not half as long as the apical lobes of the wing. Seeds 3 to 6 in each cell of the pod, ovoid, sub-compressed, without concentric ridges.

In stony ground. Extremely local, being apparently confined to Oxfordshire and Gloucestershire. It occurs near Burford in the former county, and Bourton-on-the-Water, Naunton, Sapperton Tunnel, near Cirencester, and a few other places in the latter.

England. Annual or Biennial. Spring.

Stem erect, simple or branched at the base, 2 to 9 inches high. Radical leaves in a rosette, spatulate, with a roundish oval or ovate lamina abruptly contracted into a footstalk; stem leaves few, ovate or lanceolate-ovate, cordate, amplexicaul, with rounded contiguous lobes at the base; all entire or denticulate. Flowers white, $\frac{1}{10}$ inch across. Petals nearly twice as long as the sepals, oblong, oblanceolate, entire, and rounded at the apex. Fruiting raceme rather short, about equal in length to the rest of the stem. Fruit pedicels spreading horizontally, $\frac{1}{5}$ to $\frac{1}{4}$ inch long. Pods flattish above, convex below, $\frac{1}{6}$ to $\frac{1}{4}$ inch long, and nearly as broad as long at the top including the wing, or exclusive of it $\frac{1}{8}$ to $\frac{1}{6}$ inch long, and were it not winged the shape would be shortly roundish obovate; the wing with a stout marginal nerve running round the edge. Seeds pale orange-brown, finely punctured. Whole plant glabrous and glaucous.

This species is readily distinguished from the others of this genus by the large rounded approximate auricles of the stem leaves.

T. erraticum (Jord. Pug. Plant. Nov. p. 12) appears to be scarcely entitled to be ranked as a sub-species. The Gloucestershire plant is intermediate between specimens of T. perfoliatum and T. erraticum (C. Martin, Pl. de Lyon), having the pod of the former, the leaves and seeds of the latter form.

Perfoliate Penny Cress, Perfoliate-leaved Bastard Cress,
Perfoliate Shepherd's Purse.

French, *Tabouret Perfolié.*

SPECIES III.—THLASPI ALPESTRE. *Linn.*

PLATES CXLVI. CXLVII. CXLVIII.

Rootstock slender, branched, woody, or none. Stem leaves cordate-sagittate at the base. Pods (including the wing) oblong-obovate, narrowed at the base, more or less deeply retuse at the apex; wing gradually increasing in breadth from the base, where it commences insensibly, to the apex; style equal to or exceeding the apical lobes of the wing. Seeds 4 to 8 in each cell of the pod, oval, slightly compressed, without concentric ridges,

Alpine Shepherd's Purse, Cornfield Penny Cress.

French, *Tabouret des Alpes.* German, *Alpen Pfennigkraut.*

SUB-SPECIES I.—Thlaspi sylvestre. *Jord.*

PLATE CXLVI.*

T. alpestre, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. V. Fig. 4184.
T. sylvestre, *Jord.* Obs. Pl. Nouv. Frag. III. p. 9. *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 60.
T. alpestre, var. *a*, *Bab.* Man. Brit. Bot. ed. v. p. 31; and Bot. Gazette, Vol. I. p. 4. *Hook.* & *Arn.* Brit. Fl. ed. viii. p. 32.
T. alpestre, *Gr.* & *Godr.* Fl. de Fr. Vol. I. p. 145.

Raceme when the fruit is mature longer than the rest of the stem; style about as long as the projecting apical lobes of the broad wing, which are separated by a shallow triangular sinus.

On rocks in a wood near Winch Bridge, Teesdale, and by the banks of the Allen, Thornhaugh, Northumberland; and also in Scotland, in Glen Isla, Clova.

England, Scotland. Biennial or Perennial. Early Summer.

Rootstock present only in perennial examples. Stems 6 to 15 inches high, unbranched except at the very base. Radical leaves in a rosette, spatulate, abruptly contracted into a footstalk; stem leaves sessile, amplexicaul, ovate or oblong-lanceolate, the base with 2 slightly acute auricles; the margins of all entire or slightly toothed. Flowers sub-corymbose, white, often tinged with lilac, $\frac{1}{8}$ inch across. Sepals greenish, bordered with white. Petals narrowly oblanceolate, rounded at the apex, rather more than twice as long as the sepals. Anthers dark violet. Fruiting raceme from 2 to 11 inches long. Pedicels spreading horizontally, $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Pods slightly convex above, very convex below, about $\frac{1}{4}$ inch long by $\frac{1}{8}$ inch broad, including the wing; exclusive of the wing, the shape of the pod is oval-elliptical, narrowed at the base; wing with a very indistinct marginal nerve. Seeds reddish brown, finely punctured. Whole plant glabrous and glaucous.

Short-styled Alpine Penny Cress.

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* Drawn from a Teesdale specimen by Mr. J. E. Sowerby.

SUB-SPECIES II.—**Thlaspi occitanum.** *Jord.*

PLATE CXLVII.*

T. occitanum, *Jord.* Obs. Pl. Nouv. Frag. III. p. 12.
T. alpestre, var. β, *Bab.* Man. Brit. Bot. ed. v. p. 32; and Bot. Gazette, Vol. I. p. 4. *Hook. & Arn.* Brit. Fl. ed. viii. p. 32.

Raceme when the fruit is mature equal to or shorter than the rest of the stem. Style considerably longer than the projecting apical lobes of the broad wings, which are separated by a shallow triangular sinus.

On limestone rocks at Malham, near Settle, Yorkshire, and at Llanrwst, North Wales.

England. Biennial or Perennial. Summer.

Usually a much smaller plant than the last, the stems rarely exceeding 6 or 10 inches, and branched higher up; the petals shorter, not above twice as long as the sepals; the fruiting raceme not exceeding 2 to 4 inches long; the pedicels closer together, shorter; the pod with a more shallow sinus at the apex, and a style which is considerably longer than in T. sylvestre.

The embryo in this plant has the radicle sometimes lying on the back of one of the cotyledons, instead of along their edges on one side, as is usually the case—one instance among many of the small value of this character among the Cruciferæ.

Long-styled Alpine Penny Cress.

SUB-SPECIES III.—**Thlaspi virens.** *Jord.*

PLATE CXLVIII.†

T. virens, *Bab.* Man. Brit. Bot. ed. v. p. 32; and Bot. Gazette, Vol. I. p. 4. *Jord.* Obs. Pl. Nouv. Frag. III. p. 17. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 145. *Boreau,* Fl. du Centre de la Fr. ed. iii. Vol. II. p. 61.
T. calaminare, "Lej.," *Crépin,* Man. de la Flore de Belgique, p. 33.
T. alpestre, var. γ, *Hook. & Arn.* Brit. Fl. ed. viii. p. 32.
T. alpestre, *Sm.* Eng. Bot. No. 81.

Raceme when the fruit is mature equal to or shorter than the rest of the stem. Style much longer than the scarcely projecting lobes of the narrow wing, which are so little produced that the apex of the fruit is merely emarginate.

On limestone rocks at Matlock Bath, Derbyshire.

England. Perennial. Early Summer.

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[*] Drawn from a Yorkshire specimen by Mr. J. E. Sowerby.

[†] The Plate is E. B. 81, with a pod added by Mr. J. E. Sowerby.

This plant resembles T. occitanum, but produces from the rootstock more numerous and almost always simple stems. The stem leaves are more numerous, closer together, and smaller; the corymb larger; the petals less tinged with lilac; the sepals usually purplish; and the pod truncate, emarginate at the apex, so that, though the style is not actually longer than in T. occitanum, it appears to be so; wing narrow. The leaves are also rather less glaucous.

Specimens of T. virens, authenticated by M. Jordan, from Mont Pilate differ from the Derbyshire plant in having the petals obovate instead of oblanceolate.

Green Alpine Penny Cress.

GENUS XX.—IBERIS. *Linn.*

Sepals nearly erect, equal at the base. Petals entire, with short claws, unequal, the two that point away from the stem much larger than the others. Filaments without wings or appendages. Pods much compressed at right angles to the replum, ovate, oblong, or roundish, generally notched at the apex; valves keeled down the back, the keel produced into a wing, which is most developed towards the apex; style conspicuous or elongated. Seeds oval-lenticular, not winged, only 1 in each cell of the pod.

Herbs or undershrubs, generally glabrous. Leaves rather narrow, entire or pinnatifid. Flowers white or purplish, in radiant corymbs, sometimes elongating into short racemes, but often remaining corymbose, even when the fruit is mature.

The name of this genus comes from Iberia, where it was first found. The species still abound in Spain, which is the modern Iberia.

SPECIES I.—IBERIS AMARA. *Linn.*

PLATE CXLIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. VII. Fig. 4197.

Stem herbaceous. Leaves oblanceolate or strapshaped-oblanceolate, generally toothed or pinnatifid. Pods in a short raceme, sub-orbicular, attenuated towards the apex; wings of the valves extremely narrow towards the base, broader towards the apex, and terminating in acute lobes separated by a triangular sinus; style a little longer than the lobes of the wing.

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* Drawn for the present edition by Mr. J. E. Sowerby.

A weed in cornfields and cultivated ground, on chalky soil. Well established in Oxfordshire, Berkshire, Buckinghamshire, Bedfordshire, Hertfordshire, and Cambridgeshire; it also occurs as a straggler in several other counties both in England and Scotland.

England, [Scotland]. Annual. Summer, Autumn.

Stem erect, 4 to 9 inches high, corymbosely branched at the summit, and in luxuriant examples also from the base or throughout its whole extent. Leaves scattered along the stem, sessile, the lower ones narrowly wedge-shaped at the base, generally with a few projecting teeth or short lobes on each side. Flowers white tinged with pink or purple especially on the sepals, $\frac{1}{4}$ to $\frac{3}{8}$ inch across. Petals obovate-spatulate, the inner ones twice as long as the sepals, the outer ones (the two farthest from the axis) four times as long. Fruiting raceme $\frac{1}{2}$ to 2 inches long, with spreading or divaricate pedicels about $\frac{1}{4}$ inch long. Pods about $\frac{1}{8}$ inch long; the wings narrow, except at the apex, where they terminate in 2 triangular-acuminate lobes slightly inclining outwards at the extreme apex. Seeds reddish brown, slightly roughened. Leaves deep green, usually ciliated at the edges with short hairs. Stem generally with a pubescence of curled hairs arranged in lines. Pedicels with similar hairs on their upper side.

Bitter Candytuft.

French, *Ibéride Amère.* **German,** *Bittere Schleifenblume, Bauernsenf.*

The cultivated Candytuft is familiar to every one in the most humble gardens. The seeds have a reputation in herbalists' doses as bitter and violently purgative. It has, however, no very evident qualities to recommend it.

GENUS XXI.—TEESDALIA. *R. Brown.*

Sepals spreading, equal at the base. Petals unequal, with the 2 that point away from the stem larger than the others; or equal, entire, with short claws. Filaments with an ovate membranous basal scalelike appendage on the inside close to the base. Pods compressed at right angles to the replum, notched and obcordate at the apex, concave above, convex beneath, orbicular-oval or obovate; valves keeled down the back, their keel produced into a narrow wing, which is most developed towards the apex; style very short. Seeds 2 in each cell of the pod, roundish, very slightly compressed, not margined.

Small, nearly glabrous annuals. Radical leaves numerous, in a rosette, deeply pinnatifid or sub-lyrate; stem leaves few or none, oblanceolate or elliptical, attenuated at the base, toothed or entire. Flowers white, in corymbs which afterwards elongate into racemes.

This genus of plants was named after Mr. Robert Teesdale, who was gardener at Castle Howard, and author of a Catalogue of Plants growing in that neighbourhood, which was published by the Linnæan Society in their "Transactions."

SPECIES I.—TEESDALIA NUDICAULIS. *R. Brown.*

PLATE CL.[*]

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. VI. Fig. 4189.
T. Iberis, *D. C.* Syst. Vol. II. p. 392. *Boreau,* Fl. du Centre de la Fr. ed. iii. Vol. II. p. 59.
Iberis nudicaulis, *Linn.* *Sm.* Eng. Bot. No. 327.

Flowers radiant, with the 2 petals farthest from the axis larger than the others. Stamens 6.

On gravelly commons and waste places, and in hedge-banks. Not uncommon in England, but rather rare in Scotland, except near Aberdeen; the county of Moray and the neighbourhood of Glasgow being its northern limit, so far as is known.

England, Scotland. Annual. Spring, Summer.

Stem solitary, erect, or one erect in the middle and several ascending ones round it, 3 to 18 inches high. Radical leaves very numerous, spreading into a rosette, 1 to 2 inches long, oblanceolate, stalked, deeply pinnatifid with a few short rounded lobes projecting at right angles to the petiole, and a rather large terminal lobe which is often again divided into 3 smaller lobes. Stem leaves few, only produced on the lateral stems, the one from the centre of the rosette being leafless; lowest stem leaves similar to the radical ones, but less deeply pinnatifid; upper ones oblanceolate, nearly or quite entire. Flowers about $\frac{1}{12}$ inch across, white. Petals oblanceolate, the inner ones slightly exceeding the sepals, the outer ones twice as long. Fruiting raceme 2 to 9 inches long, with the pedicels $\frac{1}{8}$ to $\frac{3}{8}$ inch long, spreading or divaricate. Pod about $\frac{1}{6}$ inch long by $\frac{1}{8}$ inch broad, slightly enlarged towards the apex, where it is obcordate; wing extremely narrow; style not half the length of the apical notch. Seeds pale reddish brown, finely punctured. Plant deep greyish green, almost or quite glabrous.

Shepherd's Cress.

French, *Téesdalie Irrégulière.* German, *Kahlstengelige Teesdalee.*

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[*] The Plate is E. B. 327, with a pod added by Mr. J. E. Sowerby.

GENUS XXII.—HUTCHINSIA. *R. Brown.*

Sepals nearly erect, equal at the base. Petals equal, entire. Filaments without wings or appendages. Pods compressed at right angles to the replum, flattish above, convex beneath, oval, scarcely notched at the apex; valves keeled down the back, but not winged; style almost none. Seeds 2 in each cell of the pod, oblong-ovoid, compressed, not margined.

Small, nearly glabrous annuals. Radical leaves in a rosette, but decaying early; stem leaves numerous, all deeply pinnatifid. Flowers small, white, disposed in corymbs which afterwards elongate into short racemes.

This genus of plants was named after Miss Hutchins, of Belfast, a lady whose name is greatly regarded by botanists, and who contributed largely to the information given in the first edition of the "English Botany" by Sir J. E. Smith, who acknowledges his obligations to her, especially as regards submarine plants.

SPECIES I.—HUTCHINSIA PETRÆA. *R. Brown.*

PLATE CLI.*

Teesdalia petræa, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. VI. Fig. 4190.
Lepidium petræum, *Linn.* *Sm.* Eng. Bot. No. 111.

Petals scarcely longer than the sepals, oblanceolate. Pod rounded at the base, obtuse, and very slightly notched at the apex.

On limestone rocks, and on walls in the West of England from Somerset to Yorkshire; also naturalized on the walls of Eltham churchyard, in Kent.

England. Annual. Spring.

Stem branched, especially near the base, 1 to 3 inches high. Radical leaves stalked, almost pinnate, with small elliptical rather distant segments, the terminal one not larger than the others; stem leaves similar, but much shorter, sessile, and with the segments more evidently connected together. Flowers about $\frac{1}{20}$ inch across. Fruit pedicels spreading, $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Pod about $\frac{1}{10}$ inch long by $\frac{1}{20}$ inch broad, very slightly attenuated towards the apex. Seeds pale reddish brown, finely punctured. Plant green, often with a reddish tinge, clothed with short scattered hairs, those on the stem starlike.

Rock Hutchinsia.

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* The Plate is E. B. 111, with a pod added by Mr. J. E. Sowerby

TRIBE X.—LEPIDINEÆ.

Cotyledons flat, *i. e.* bent over close to the base, with the radicle lying on the back of one of them (incumbent), or bent over in the middle, the lower portion being in the same line as the radicle, the upper portion lying against the radicle, which is on the back of one of them. Pod short and broad, compressed at right angles to the direction of the replum, generally opening by 2 convex valves, with frequently a wing down the central line of the back or part farthest from the replum.

GENUS XXIII.—CAPSELLA. *Mönch, in D. C.*

Sepals nearly erect, equal at the base. Petals equal, entire, or none. Filaments without wings or appendages. Pods compressed at right angles to the replum, wedge-shaped, obovate, obcordate at the apex or elliptical-ovoid; valves keeled but not winged; style short. Seeds rather numerous, oblong-ovoid, not margined. A genus of which one of the species (C. Bursa-pastoris) has the habit of Thlaspi, the others that of Hutchinsia.

The name of this genus is a diminutive of *capsula*, a capsule.

SPECIES I.—CAPSELLA BURSA-PASTORIS. *Mönch.*

PLATE CLII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. XI. Fig. 4229.
Thlaspi Bursa-pastoris, *Linn.* *Sm.* Eng. Bot. No. 1485. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 147.

Stem leaves sessile, amplexicaul, oblong-lanceolate, hastate-sagittate at the base. Pod nearly flat, wedge-shaped or obovate-wedgeshaped, truncate-emarginate or obcordate at the apex.

In waste and cultivated ground, and by roadsides. Very common throughout the whole of Britain.

England, Scotland, Ireland. Annual. Spring to Autumn.

Stem erect, 6 inches to 2 feet high. Radical leaves in a rosette, oblanceolate, varying from very deeply pinnatifid to quite entire; stem leaves rather distant, variable in shape and outline, produced at the base into two rather acute auricles which are sometimes parallel and sometimes divergent. Flowers corymbose, white, about $\frac{1}{10}$ inch across. Petals oblanceolate, about half as long again as the sepals. Fruit pedicels spreading, $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Pod $\frac{1}{4}$ to $\frac{3}{8}$ inch long, and ⅕ to ¼ inch long at the summit, the sides nearly straight, the apex truncate and emarginate, the lobes on each side of the style slightly rounded; style about half as long as the lobes. Seeds cylindrical-oblong, reddish brown, coarsely punctured. Plant greyish green, sometimes glabrous and sometimes clothed with long hairs and stellate down.

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* The Plate is E. B. 1485, unaltered.

Common Shepherd's Purse, Poor Man's Parmacetic,
St. James's Weed, Cassweed.

French, *Capselle Bourse-à-Pasteur.* German, *Gemeiner Hirtentäschel, Täschelkraut.*

This little plant is known to every wayfarer, and is seen in every garden, where it grows far too rapidly to be pleasant to the gardener. When cultivated in a rich soil it attains a much larger size than when living as a weed on wild bits of ground. In America it is used as a green vegetable, and is cultivated about Philadelphia for that purpose. It was formerly employed as an astringent against spitting of blood, bleeding at the nose, and as a styptic to wounds.

GENUS XXIV.—LEPIDIUM. *Linn.*

Sepals short, erect or spreading, equal at the base. Petals equal, entire, or none. Filaments without wings or appendages, 2 or 4 of them sometimes abortive or absent. Pod generally compressed at right angles to the replum, and usually more convex on the lower than on the upper surface, variable in shape but generally oval or orbicular, more or less notched at the apex, more rarely scarcely compressed and constricted between the valves so as to be didymous; valves keeled down the back, with the keel frequently, but not always, produced into a wing, usually leaving the seeds attached to the placentæ round the replum when they separate, more rarely closed over the seed and covering it with them; style almost none or elongate. Seeds 1 (or very rarely 2) in each cell, ovoid or oblong-ovoid, more rarely compressed. Embryo with the cotyledons folded over at the point where they join the radicle.

Glabrous or hairy herbs or undershrubs. Flowers small, white, in corymbs or very short racemes, which afterwards elongate.

The name Lepidĭum comes from λεπις (*lepis, lepidos*), a scale, in allusion to the form of the pods, which resemble little scales.

SUB-GENUS I.—NASTURTIASTRUM. *Gr. & Godr.*

Pod orbicular or oval, compressed, entire or scarcely notched at the apex; valves keeled, but not winged or very slightly so; cotyledons entire.

SPECIES I.—LEPIDIUM LATIFOLIUM. *Linn.*

PLATE CLIII.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. X. Fig. 4219.

Rootstock thick, branched. Radical leaves not in a rosette, on long stalks, oval-oblong; stem leaves lanceolate, sessile, all finely toothed or entire. Petals twice as long as the calyx. Stamens 6. Pod lenticular, oval-orbicular, very indistinctly notched at the apex, slightly downy; valves keeled but not winged; style none.

In salt marshes and in wet sandy places near the sea. Rather rare, and possibly not native in many of the stations recorded for it. Essex and Norfolk seem to be the counties in which it has most claims to be considered indigenous. In Scotland it grows at Tantallan Castle, Berwickshire, and about Weems and Donibristle in Fifeshire, but cannot be considered as more than a naturalized plant.

England, [Scotland,] Ireland. Perennial. Late Summer and Autumn.

Rootstock long, emitting numerous subterranean stolons, and producing erect stems paniculately branched at the top and 2 to 4 feet high. Radical leaves on long stalks, very large, the lamina 6 to 10 inches long by 3 or 4 broad, somewhat resembling those of the Horseradish in shape but more abrupt and rounded at the base, persistent; stem leaves, except the lowest, sessile, but all more or less narrowed towards the base and more gradually so towards the apex. Branches of the stem forming a panicle, each branch having one terminal and several lateral corymbs of small white flowers; corymbs with 1 to 3 bracts on their stalks. Flowers about $\frac{1}{10}$ inch across; petals obovate; corymbs scarcely lengthening into racemes when in fruit. Fruit pedicels about $\frac{1}{8}$ inch long. Pod about $\frac{1}{16}$ inch long, sometimes abortive. Seeds very small, oblong-ovoid, compressed, dark reddish brown, finely punctured. Whole plant glabrous and dull glaucous green.

Broad-leaved Pepperwort, Poor Man's Pepper.

French, *Passerage à Larges Feuilles.* German, *Breitblättriges Pfefferkraut*, or *Kresse.*

This plant, from its hot pungent taste, was much used as a condiment before the various substitutes for Pepper became common. It was sometimes called Dittander, and under that name was cultivated in cottage gardens. An infusion of the leaves is emetic, and from this action it was probably considered to be valuable as a remedy in colic. We find Pliny, quoted by Gerarde, to say: "It is of the number of scorching and

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* The Plate is E. B. 182, with a pod added by Mr. J. E. Sowerby.

blistering simples, and therefore by his hot quality it mendeth the skin in the face, and taketh away scabs, scars, and manginess if anything remain after the healing of ulcers and such like."

SPECIES II.—LEPIDIUM RUDERALE. *Linn.*

Plate CLIV.[*]

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. X. Fig. 4215.

Rootstock none. Radical leaves in a rosette, stalked, very deeply pinnatifid (almost pinnate), with the segments usually again pinnatifid or lobed; stem leaves pinnatifid with narrow entire lobes, the uppermost ones sessile, strap-shaped, and entire, without auricles at the base. Petals very rarely present. Stamens usually only 2. Pods lenticular, oval-orbicular, distinctly notched at the apex, glabrous; valves keeled, with the keel almost expanded into a wing at the summit; style none.

In waste places, especially near the sea, in the East and South of England. Apparently most frequent in Norfolk, Suffolk, and Essex; and occurring also on ballast hills in South Wales, Yorkshire, and Fifeshire.

England, [Scotland,] Ireland. Annual. Summer, Autumn.

Stem erect, 6 inches to 1 foot high, corymbosely branched, with numerous spreading or ascending branches in the upper part. Radical leaves in a rosette, decaying early, as indeed most of the pinnatifid stem leaves do before the fruit is mature, so that then only the narrow strap-shaped entire ones remain. Flowers corymbose, appearing greenish from the absence of the petals. Fruit raceme rather elongate. Pedicels spreading or slightly ascending, $\frac{1}{8}$ to $\frac{3}{16}$ inch long. Pods about $\frac{1}{10}$ inch long, rather more convex below than above; valves very slightly winged at the top, and projecting into a small rather obtuse lobe on each side of the sessile stigma. Seeds yellowish brown, oblong-oblanceolate, much compressed, finely punctured. Whole plant dull green, with the stem, leaves, and peduncles slightly pubescent.

Narrow-leaved Pepperwort, Rubbish Pepperwort.

French, *Passerage des Décombres.* German, *Schutt-Pfefferkraut.*

SUB-GENUS II.—CARDAMON. *D. C.*

Pod oval, orbicular, much compressed, notched at the apex; valves keeled, distinctly winged. Cotyledons tripartite.

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[*] The Plate is E. B. 1595, with a pod added by Mr. J. E. Sowerby.

SPECIES III.—**LEPIDIUM SATIVUM.** *Linn.*

PLATE CLV.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. IX. Fig. 4212.

Rootstock none. Radical leaves in a rosette, stalked, very deeply pinnatifid (almost pinnate) with the segments again pinnatifid or lobed; stem leaves pinnatifid, with a few long narrow segments which are sometimes again pinnatifid, or with small projecting teeth or lobes towards the apex; the uppermost ones sessile, strap-shaped, and entire, without auricles at the base. Petals twice as long as the sepals. Stamens 6. Pod lenticular, sub-orbicular, distinctly notched at the apex, glabrous; valves conspicuously winged towards the top, forming a rounded lobe on each side of the style, and separated by a rather narrow sinus; style half as long as the notch. Seeds elliptical- or oblong-prismatical, compressed.

On rubbish heaps. Not uncommon, but without any claims to be considered indigenous, the seeds being always of garden origin.

[England, Scotland]. Annual. Summer.

Stem erect, 1 to 2 feet high, much branched in the upper part, the branches ascending-erect. Radical leaves soon decaying; stem leaves with rather distant lobes, all narrowed towards the base. Flowers white, about $\frac{1}{12}$ inch across. Fruiting raceme long. Pedicels erect, closely applied to the stem, $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Pod about $\frac{1}{4}$ inch long, and very nearly as broad. Seeds pale reddish brown, finely punctured, generally 3-sided. The cotyledons are curious, being divided into 3 lobes of which the centre is the longest. Whole plant glaucous, nearly glabrous, or with small distant hairs.

Garden Cress.

French, *Passerage Cultivée.* German, *Gartenkresse.*

This species is well known as the common Garden Cress. It is a native of the East, but has now become naturalized. It ranks among gardeners as the principal of small salads. The varieties are: 1, The plain-leaved, chiefly cultivated; 2, The curled-leaved, used principally as a garnish; 3, The broad-leaved, which is less used as a salad than as a food for young turkeys. All varieties are raised from seed, and are of very rapid growth. They are sometimes raised on porous earthenware vessels of a conical form, having small gutters for retaining the seed. These are called pyramids, and are somewhat ornamental in winter, and afford repeated gatherings.

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* Drawn by Mr. J. E. Sowerby from a specimen from Wimbledon Common.

SUB-GENUS III.—LEPIA. *D. C.*

Pod ovate or oval-oblong, flattish or concave above, convex beneath, distinctly notched at the apex; valves keeled and broadly winged, especially towards the summit. Cotyledons entire.

SPECIES IV.—LEPIDIUM CAMPESTRE. *R. Brown.*

PLATE CLVI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. IX. Fig. 4214.
Thlaspi campestris, *Linn.* *Sm.* Eng. Bot. No. 1385.

No rootstock. Stem sub-solitary, erect. Radical leaves in a rosette, stalked, oblanceolate or spatulate, entire, toothed or sublyrate; stem leaves (except the very lowest) sessile, amplexicaul, oblong, lanceolate or strap-shaped, entire or toothed, with acute slightly diverging auricles at the base. Petals a very little longer than the sepals. Stamens 6. Pod shortly ovate-oblong, notched at the apex, covered with small vesicles or papillæ; valves keeled from the base to the apex, where the wings are broadest and project into a rounded lobe on each side of the style, separated by a deltoid sinus; style scarcely exceeding the notch. Seeds oblong, compressed, somewhat curved.

In cultivated fields, on dry banks, and by roadsides. Rather common in England, but less so in Scotland, where, probably, several of the localities from which it has been reported really belong to L. Smithii; Fifeshire and Kincardineshire being the only Scotch counties in which I have myself met with it.

England, Scotland, Ireland. Biennial. Summer.

Stem erect, solitary or 2 or 3 from the same rosette, 1 to 2 feet high, usually more or less corymbosely branched in the upper part; branches ascending. Radical leaves decaying early, varying from entire to lyrate-pinnatifid; stem leaves numerous, sagittate-hastate, entire or denticulate. Flowers white, about $\frac{1}{12}$ inch across; anthers yellow. Fruiting raceme very long. Pedicels spreading or slightly declined, $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Pods about $\frac{1}{4}$ inch long, slightly concave above, very convex near the base beneath; exclusive of the wing the pod is ovate-deltoid, and including the wing ovate-oblong, obcordate at the apex. Seeds dark brown, coarsely punctured. Whole plant greyish green, downy all over, rarely glabrous. Pedicels hispid, with spreading hairs. Pod sometimes hairy, but usually with only small raised vesicles resembling scales when dry.

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* The Plate is E. B. 1385, with a pod added by Mr. J. E. Sowerby.

The style should be examined in mature pods, as it considerably exceeds the notch until the wings are fully developed.

Common Mithridate Pepperwort, Cow Cress.

French, *Passerage des Champs.* German, *Feld-Pfefferkraut.*

SPECIES V.—LEPIDIUM SMITHII. *Hook.*

PLATE CLVII.*

L. hirtum (in part), *Sm.* Eng. Fl. Vol. III. p. 16 (non *Linnæus*).
L. heterophyllum β, canescens, *Gr. & Godr.* Fl. de Fr. Vol. I. p. 150.
Thlaspi hirtum, *Sm.* Eng. Bot. No. 1803.

Rootstock woody, simple, or branched at top. Stems numerous, ascending. Radical leaves oblanceolate or elliptical, attenuated at the base into a footstalk; stem leaves (except the very lowest) sessile, amplexicaul, oblong or lanceolate; all entire or toothed, with long acute sub-parallel auricles. Petals rather more than half as long again as the sepals. Stamens 6. Pod sub-rhomboidal-ovate, glabrous or with a few small inconspicuous vesicles; valves keeled from the base to the apex, where the wings are broadest and project into a sub-triangular rounded lobe on each side of the style, separated by a broad shallow notch; style twice as long as the notch. Seeds prismatical-ovoid, coarsely punctured.

In pasture fields and waste places, and by roadsides. Not uncommon in England; and in Scotland more common than L. campestre, reaching as far north as Morayshire and Dumbartonshire.

England, Scotland, Ireland. Perennial. Spring, Summer.

Very like L. campestre, but the woody rootstock produces many more stems, from 6 to 18 inches long, decumbent at the base and curving upwards at the extremity, where they are frequently corymbosely branched. The stem leaves are shorter, more sagittate at the base, and generally more distinctly toothed; the flowers larger; the anthers violet. The pods are extremely similar, but in the present species a little more narrowed towards the base, and considerably so towards the apex, which is less deeply notched on account of the wings not being so much developed. The surface of the pods is glabrous, with but a slight trace of the vesicular papillæ which form so conspicuous a feature in those of L. campestre. The style is a little longer than in that species, and projects conspicuously beyond the notch. The seeds are shorter and more regularly oblong-ovoid. The stem and pedicels are hispid, with short spreading hairs. The leaves vary from being downy to quite glabrous, in which latter case it is probably the form distinguished as L. heterophyllum (Bentham), of which, however, I have seen no authentic specimens.

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* The Plate is E. B. 1803, with a pod added by Mr. J. E. Sowerby, and the pod of L. hirtum omitted.

Smooth Field Pepperwort.

SUB-GENUS IV.—CARDARIA. *D. C.*

Pod cordate-deltoid, sub-didymous from being constricted between the valves, which are convex both above and below, indistinctly keeled, and not at all winged. Cotyledons entire.

SPECIES VI.—LEPIDIUM DRABA. *Linn.*

PLATE CLVIII.*

Cardaria Draba, *Reich.* Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. IX. Fig. 4211.
Cardaria Draba, *De Vaux*, Journal Bot. Vol. III. p. 163.
Cochlearia Draba, *Linn.* Sp. Pl. ed. ii. p. 904.

Rootstock slender, woody. Stems sub-solitary, flexuous, ascending. Radical leaves obovate, stalked. Stem leaves sessile; the lower ones obovate, slightly sagittate at the base; upper ones oblong-oval, ovate or lanceolate, amplexicaul, with very large converging auricles. Petals more than twice as long as the sepals. Stamens 6. Pod rather broader than long, reniform-deltoid, constricted between the valves, which have no wing; style more than half as long as the pod. Seeds obovate-ovoid, coarsely punctured.

In fields and waste ground, but certainly not native. Battersea Fields and railway banks near Forest Hill, Surrey; near Ramsgate, Dartford, and Woolwich, Kent; near Oakington, Cambridgeshire; in several places in Essex; Swansea, Glamorgan; and also in Cheshire, Worcester, and a few other counties.

[England]. Perennial. Summer.

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* The Plate is E. B. S. 2683, with a pod added by Mr. J. E. Sowerby.

Rootstock branched, producing barren tufts of radical leaves and zigzag stems 1 to 2 feet long, corymbosely branched at the summit. Radical leaves stalked, dentate or sinuate, those on the flowering stems decayed by the time the flowers expand; lower stem leaves much narrowed towards the base, where they are again expanded into 2 small acute auricles; upper leaves varying from ovate to lanceolate, with very large acute (or more rarely obtuse) auricles meeting in front of the stem. Flowers white, about ⅕ inch across, with the petals broadly obovate, attenuated into a long slender claw. Fruiting raceme short. Pedicels spreading, about ½ inch long. Pod (exclusive of style) about ⅛ inch long by ¼ broad when equally developed; but this is rarely the case, as one of the valves is usually larger than the other, and the seed in the smaller valve is generally abortive; valves much contracted where they meet each other, so as to carry the seed with them when they fall off; the surfaces with small vesicular papillæ. Seeds dark brown. Plant sub-glabrous or with adpressed hairs, glaucous.

Whitlow Pepperwort.

French, *Passerage Drave.*

GENUS XXV.—SENEBIERA. *D. C.*

Sepals short, spreading, equal at the base. Petals equal, entire, or none. Stamens without wings or appendages, 2 or 4 of them sometimes abortive or absent. Pod compressed at right angles to the replum, transversely ovoid or reniform, with radiating or transverse irregular ridges, notched or pointed at the apex, constricted between the valves so as to be didymous; valves without wings, not separating, or, if they do, closed over the seed and carrying it with them; style none, or short. Seeds 1 in each cell of the pod, roundish-ovoid, scarcely compressed. Embryo with the cotyledons folded over on themselves above the base.

Small annual or biennial herbs, diffusely branched; primary axis reduced to a sub-sessile leafless inflorescence. Flowers small, white, in lateral and terminal corymbs afterwards lengthening into short racemes.

This genus of plants was named in honour of John de Senebier, of Geneva, a vegetable physiologist.

SPECIES I.—SENEBIERA DIDYMA. *Pers.*

PLATE CLIX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. IX. Fig. 4209.
S. pinnatifida, *D. C.* Syst. Vol. II. p. 523. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 154.
Coronopus didyma, *Sm.* Brit. Fl. Vol. III. p. 691.
Lepidium didymum, *Linn.* Mant. XCII. *Sm.* Eng. Bot. No. 248.

Petals shorter than the sepals, or none. Pods transversely ovoid, notched both at the base and apex, much constricted between the valves so as to be didymous; valves deciduous, roundish-ovoid, their surface with waved transverse ridges anastomosing in the middle, but not projecting in points beyond the margins; stigma sessile in the apical notch.

In waste ground and on roadsides in the southern and western counties of England. Probably wild in Cornwall, Devon, Somerset, Hants, South Wales, and Carnarvonshire; but north of the latter county, and on the east coast, and in a few of the inland counties, it cannot be considered as more than an escape from gardens.

England, Ireland. Annual or Biennial. Summer, Autumn.

Stems all lateral, procumbent, spreading, somewhat dichotomously branched towards the extremity, 6 inches to 1 foot long. Leaves stalked, the uppermost sessile, all deeply pinnatifid (almost pinnate); segments of the radical and lower stem leaves obovate or oblanceolate, divided into slender acute lobes principally on the side directed towards the apex of the leaf, those of the upper leaves narrower and more entire. Inflorescence in sessile corymbs, one (the central axis) in the middle of the stems; the others opposite the leaves or in the forks of the branches. Flowers white, $\frac{1}{20}$ inch across; petals white, not exceeding the sepals, but most usually absent; stamens with seldom more than 2 of the filaments bearing anthers. Fruiting raceme short but rather lax; pedicels spreading, $\frac{1}{8}$ to $\frac{1}{4}$ inch long, slender. Pods $\frac{1}{16}$ inch long by $\frac{1}{10}$ inch broad; the valves containing the seeds falling off very readily, and then bearing some resemblance to the achenes of one of the Batrachian Ranunculi. Seeds pale yellowish brown, reniform, punctate-striate. Embryo with the lower part of the cotyledons in the same line as the radicle, the upper part folded over so as to bring the tip of the back of one of them against the radicle, much as in Subularia; but in that the cotyledons are straight or slightly convex towards the outside above the fold, while in the present plant they are concave to the outside. Leaves somewhat fleshy, deep green, glaucous. Stem and pedicels slightly hairy.

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* The Plate is E. B. 248, with additions by Mr. J. E. Sowerby.

Lesser Wart Cress.

French, *Sénébière à Silicules Jumelles.* German, *Zweiknotige Feldkresse.*

SPECIES II.—SENEBIERA CORONOPUS. *Poir.*

PLATE CLX.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. IX. Fig. 4210.
Coronopus Ruellii, *Gaert.* Vol. II. p. 293. *Sm.* Eng. Bot. No. 1660.
Cochlearia Coronopus, *Linn.* Sp. Pl. p. 904.

Petals longer than the sepals. Pods reniform, much compressed, emarginate at the base, but with a pyramidal point at the apex, with a furrow between the valves, but not didymous; valves not deciduous, their surface rugose, with prominent waved ridges, which project beyond the edges of the valves, forming compressed tubercles, and these ridges are generally connected by smaller transverse wrinkles; style forming the apex of the pyramidal point.

In waste ground and by roadsides. Common in the South and East of England; rare in Scotland, where it is confined to the coast, reaching its northern limit in Moray and Wigtonshire.

England, Scotland, Ireland. Annual or Biennial.

Stems all lateral, prostrate, spreading, somewhat dichotomously branched towards the extremity, 2 to 12 inches long. Leaves stalked, deeply pinnatifid (almost pinnate); segments of the radical and lower stem leaves obovate or oblanceolate, divided into short lobes principally on the side directed towards the apex of the leaf, those of the upper leaves narrower and more entire. Inflorescence in sessile corymbs, one (the central axis) in the middle of the stems, the others opposite the leaves. Flowers white, $\frac{1}{10}$ inch across; petals one-fourth as long again as the sepals, which are more persistent than in S. didyma; stamens generally all perfect. Fruiting raceme very short and dense; pedicels spreading, $\frac{1}{20}$ inch long, very thick. Pods $\frac{1}{8}$ inch long by $\frac{1}{6}$ inch broad, varying (even on the same plant) in the degree of prominence of the ridges, and the presence or absence of connecting cross wrinkles; when these are present, the surface is honeycombed; the furrow between the valves deeper on the upper side than on the lower. Seeds resembling those of S. didyma, but scarcely curved and twice as large. Plant deep green, rather fleshy, entirely glabrous.

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* The Plate is E. B. 1660, with additions by Mr. J. E. Sowerby.

Common Wart Cress, Swine's Cress.

French, *Sénébière Corne de Cerf.* German, *Gemeine Feldkresse.*

This little plant has a very active flavour of a mustard and cress character, every part of it, seed-pods and all, partaking of it. It is called Swine's Cress, because pigs are said to indulge in it.

TRIBE XI.—ISATIDEÆ.

Cotyledons flat, *i. e.* bent over close to the base, with the radicle lying on the back of one of them (incumbent). Pod short and rather broad, compressed at right angles to the plane of the junction of the valves (there being no replum), 1-celled and 1-seeded; valves not separating at all, or only opening a little way.

GENUS XXVI.—ISATIS. *Linn.*

Sepals spreading, equal at the base. Petals equal, entire, with short claws. Stamens without wings or appendages. Pod oval-oblong or linear, flattened, the greater portion of it consisting of the enormously developed wings of the valves; the cell itself occupying a small space in the middle, and containing a single seed; valves not separating; stigma sessile. Seeds prismatic-cylindrical, not margined.

Annual or biennial, erect, branched herbs, with the stem leaves sagittate. Flowers generally yellow, in compound corymbose panicles made up of numerous small simple corymbs, which lengthen into very short racemes in fruit. Pedicels very slender. Pod large, pendulous, articulated to the pedicels.

The name of this genus comes from *ισαζω* (*isazo*), to render equal, the plant being supposed to destroy by its application all roughness and inequalities of the skin. All the species yield a blue dye, which is used by dyers. It is often used as a substitute for indigo, which it greatly resembles.

SPECIES I.—ISATIS TINCTORIA. *Linn.*

PLATE CLXI.*

Reich. Ic. Fl. Germ. et Helv. Vol. II. *Tetr.* Tab. IV. Fig. 4177.

Radical leaves slightly denticulate or crenate; stem leaves amplexicaul, sagittate, entire. Pods narrowly oblong, slightly narrowed towards the base, truncate or rounded at the apex.

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* Drawn from E. B. 97, and corrected from a Guildford specimen by Mr. J. E. Sowerby.

In cultivated fields and in chalk-pits, but certainly not native, and scarcely even naturalized except in the chalk-pits near Guildford, Surrey.

[England, Scotland]. Biennial. Early Summer.

Stem erect, 2 to 4 feet high, branched at the top. Radical leaves ovate or lanceolate, attenuated at the base into long footstalks. Stem leaves sessile, sagittate at the base; the lower ones oblanceolate; upper ones oblong-lanceolate or lanceolate. Corymbs crowded at the ends of the branches. Flowers about $\frac{1}{6}$ inch across; sepals yellow; petals narrowly oblanceolate, twice as long as the sepals, yellow. Fruiting raceme very short; pedicels very slender, deflexed, $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Pods pendulous, about $\frac{1}{2}$ inch long and $\frac{1}{6}$ inch broad, glabrous, at first straw-coloured, but purplish brown when ripe; the pod itself, which contains the seed, is elliptical, with a longitudinal rib prolonged beyond the base and apex until it reaches the base and apex of the wing, which is rather more than thrice as broad as the cell of the pod, and much less hard in consistency. Seeds yellowish brown, three times as long as broad. Radical leaves not glabrous, with short distant hairs; stem leaves glabrous and glaucous. Stem glabrous towards the top, and nearly so throughout.

Dyer's Woad.

French, *Pastel des Teinturiers.* German, *Färber-Waid.*

The history of Woad as a British plant commences with that of this island, when Cæsar found the natives stained with it. At this time it must have been a plentiful inhabitant of the country, but afterwards, probably from its extensive use, it became less common, and we find our Saxon forefathers importing Woad to dye their homespun cloth. Their name for it was Wad, or Waad, whence the English word in use for the colour itself. The plant is still cultivated in this country on account of its colouring properties, chiefly in Lincolnshire, and is used not so much to produce a blue colour on cloths as to form a base or mordant for a black dye. The cultivation of Woad was formerly carried on by people who devoted themselves entirely to it; and as crops of the plant are not successful for more than two years on the same piece of land, they never stayed long in one place, but hiring land in various districts, led a wandering life with their families, and gained their living by their crops; now, however, many farmers devote a portion of their land to the growth of Woad, alternating the spots year after year. The foliage is the part of the plant used; the leaves are picked off first when the herb is in flower, the lower ones being taken just when turning yellowish; the gathering is repeated three or four times at intervals of a few weeks; but the first picking is the best. The leaves are dried a little in the sun, then they are ground in a mill to a pasty mass, which is formed into heaps exposed to the air, but protected from rain, until it ferments. A crust which forms over it is carefully prevented from breaking, and when fermentation is complete, usually in about a fortnight, the mass is again mixed up and formed into cakes. Before being used by the dyer, these cakes have to be again broken up, moistened, and subjected to further fermentation : much of the quality of the dye is said to depend on the way in which this operation is performed. The colour is brought out by mixing an infusion of the Woad thus prepared with lime-water. The best Woad is worth £20 or more a ton, although its price has declined since the extensive introduction of indigo, to which it is inferior in richness of colour, but is more permanent. Some time ago the Woad was recommended as a fodder plant, and has been so employed in France and Belgium; but our farmers do not consider it a remunerative investment in comparison with our own root and leaf crops. The interest of this plant is considerable, when we consider the antiquity of its use, and its connection with the earliest attempts at personal decoration by our forefathers, to whom it supplied, according to historians and poets, all the requirements of a fashionable toilette.

EXCLUDED SPECIES.

VELLA ANNUA. *Linn.* (E. B. 1442.)

Said to have been found on Salisbury Plain. Probably a mistake, as the Rev. W. W. Newbould informs me that the plant which represents it in the Sloane Herbarium is Reseda lutea.

MALCOMIA MARITIMA. *R. Brown.*

Has been found near Dover. No doubt an escape from cultivation. It does not now grow in the station recorded for it.

CARDAMINE BELLIDIFOLIA. *Linn.* (E. B. 2355.)

The only authority for this plant is Withering, in whose Herbarium two examples of it are preserved, said to be from Scotland. The other stations recorded for it have been by mistaking Arabis stricta or hirsuta, and Cochlearia alpina for Cardamine bellidifolia, as shown by the Sloane Herbarium, etc.

ALYSSUM INCANUM. *Linn.*

Has been recorded from near Lewes and Weymouth, but is not permanently established in Britain.

LEPIDIUM HIRTUM. *Linn.*

Smith confounded this plant with L. Smithii, but he sent two pods of the true plant to be drawn for "English Botany." A plant in the Sloane Herbarium from the Welsh mountains may be L. hirtum, but has the pods broader and more oval.

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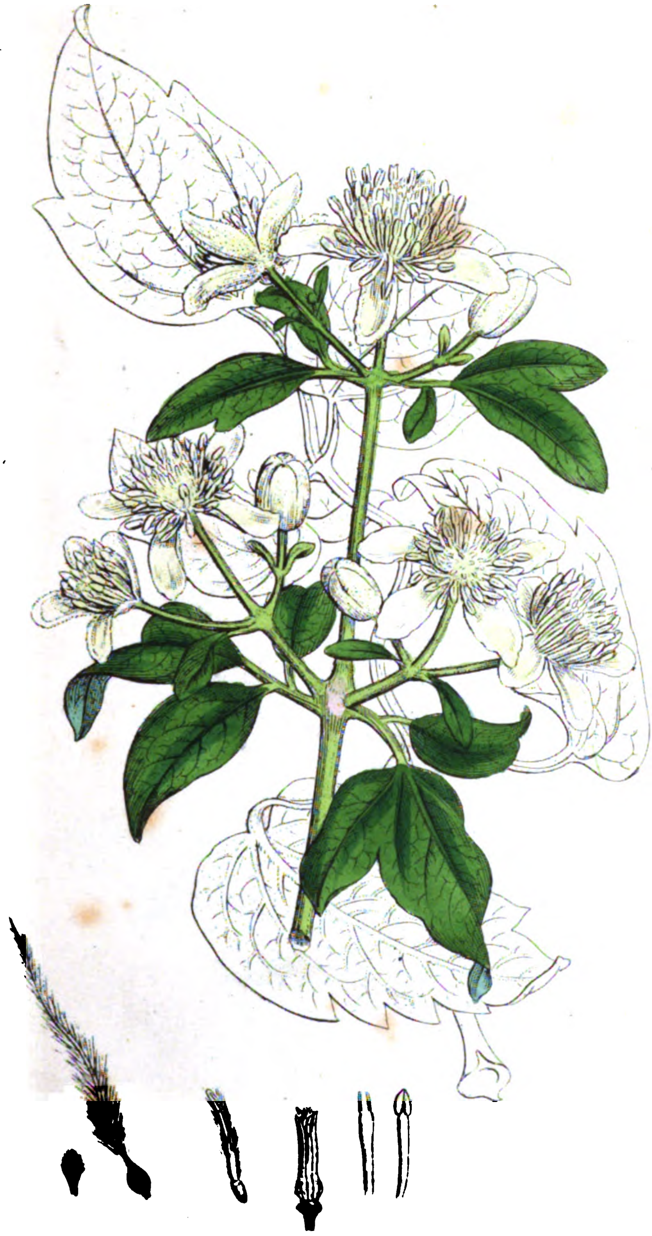
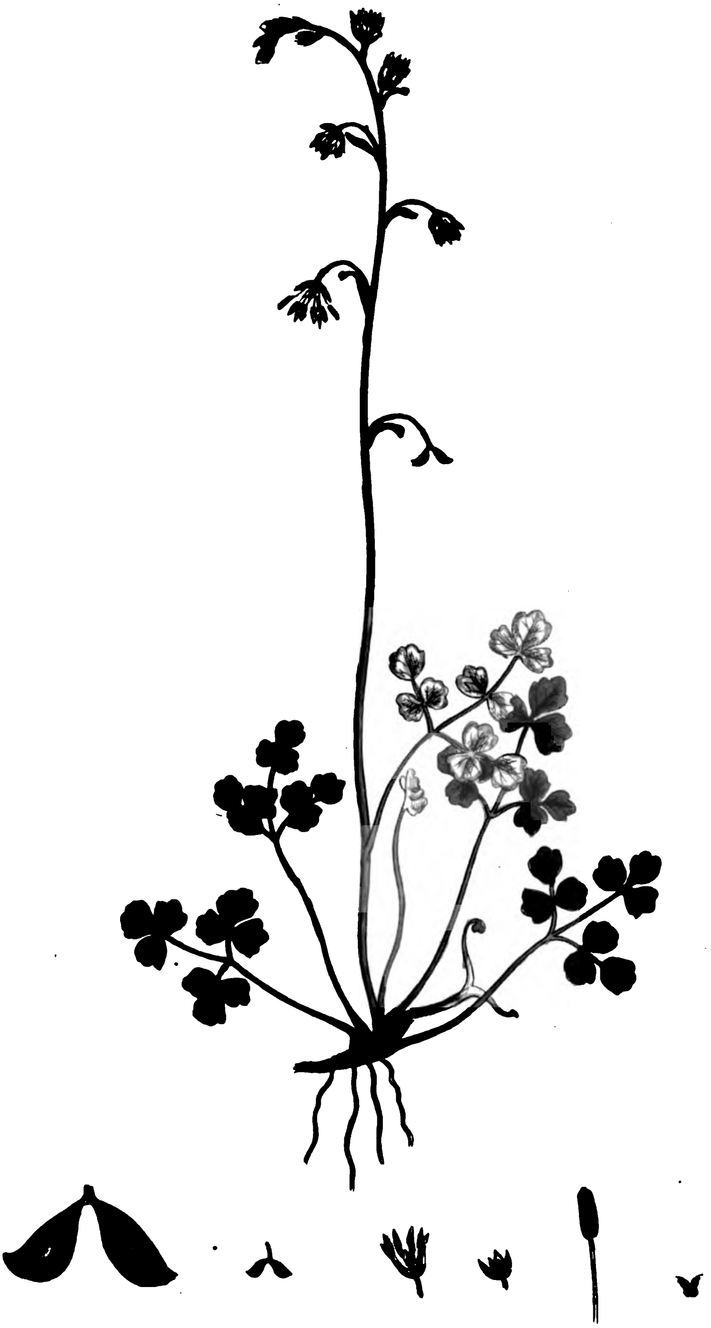
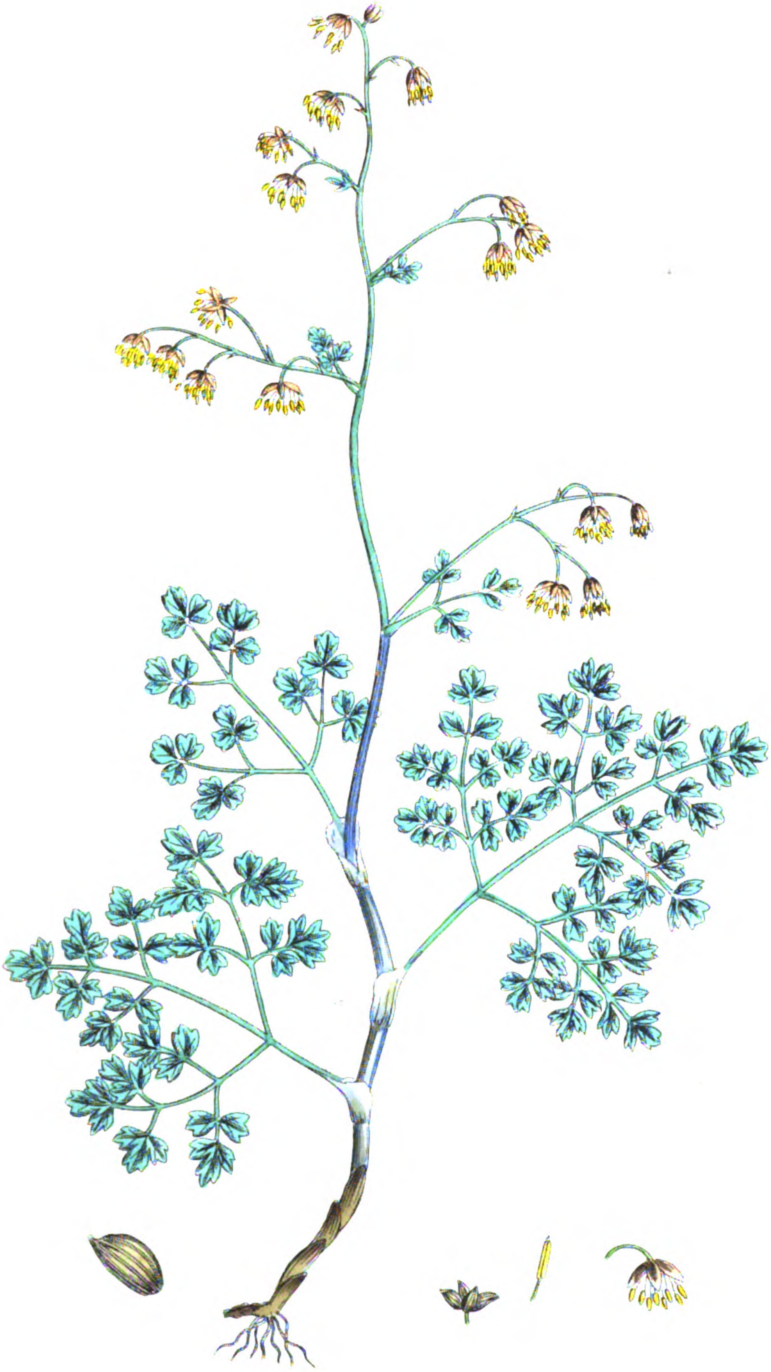


E. B. 612.

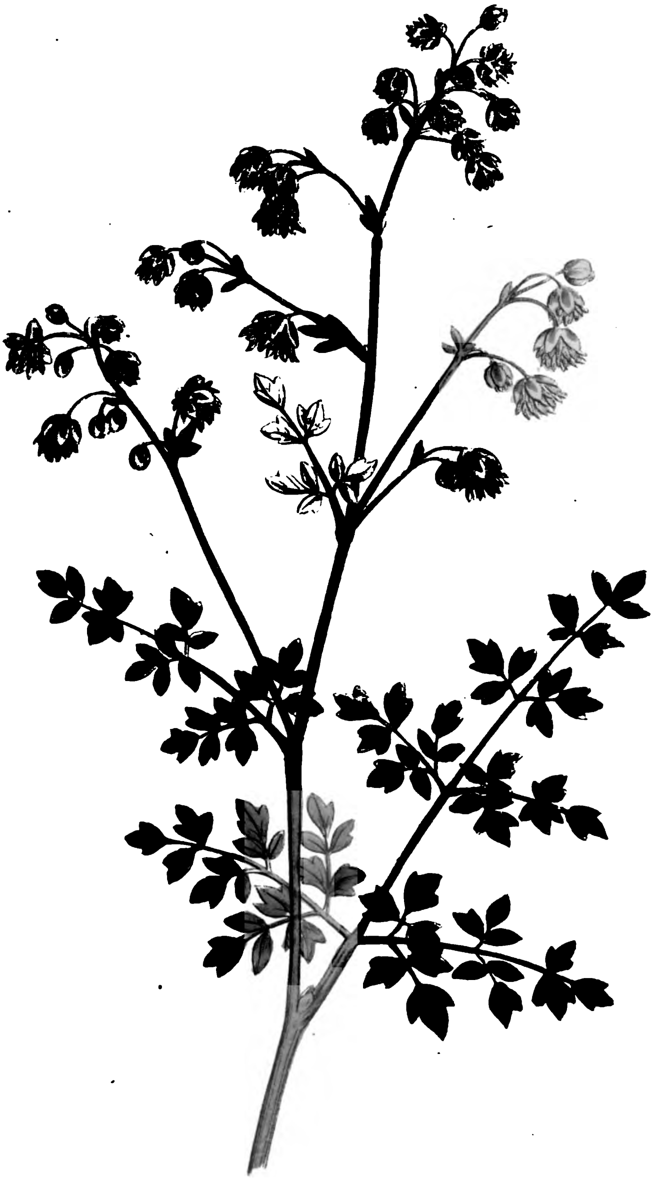
Clematis Vitalba. Common Traveller's Joy.



Thalictrum Alpinum. Alpine Meadow Rue.

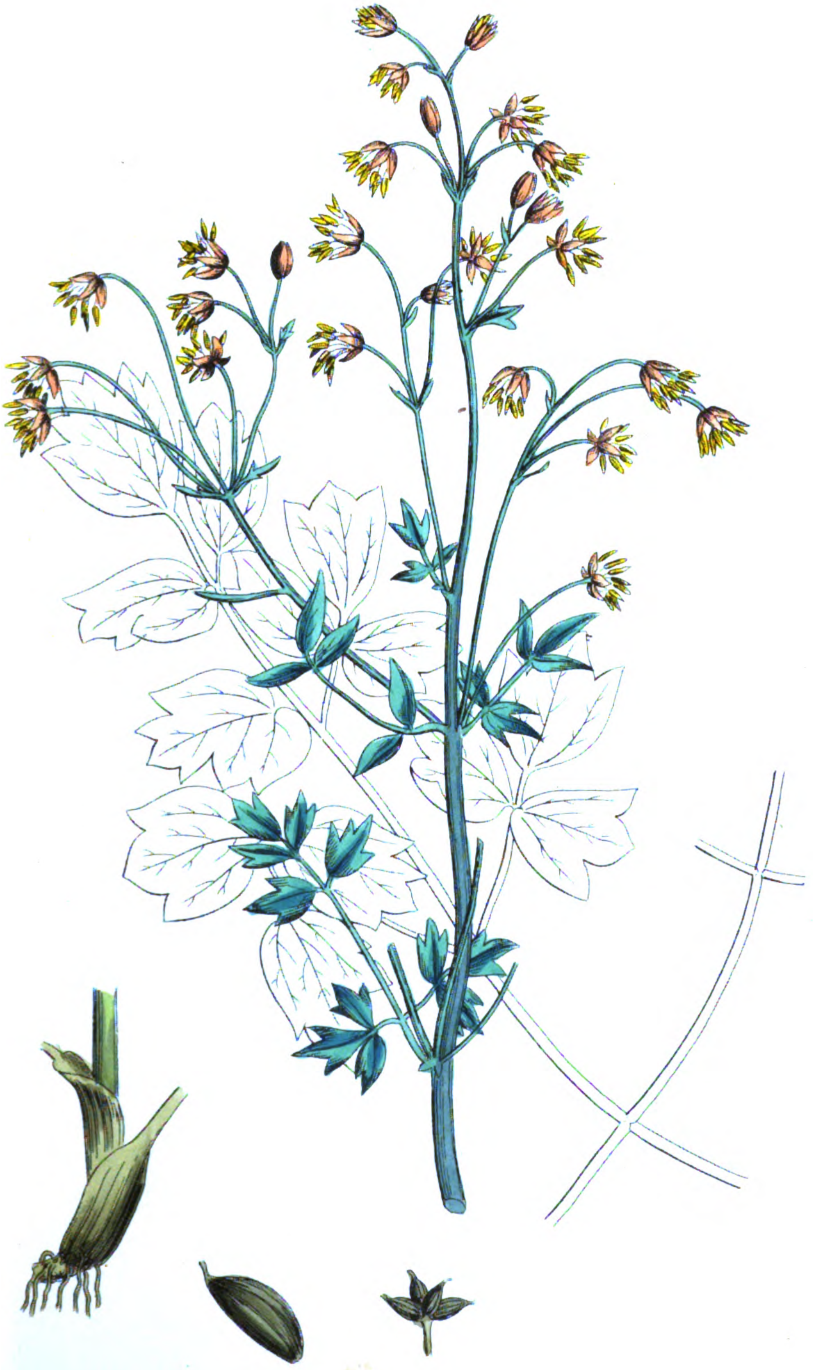


Thalictrum minus, maritimum. Lesser Meadow Rue. *var α*



E. B. 11.

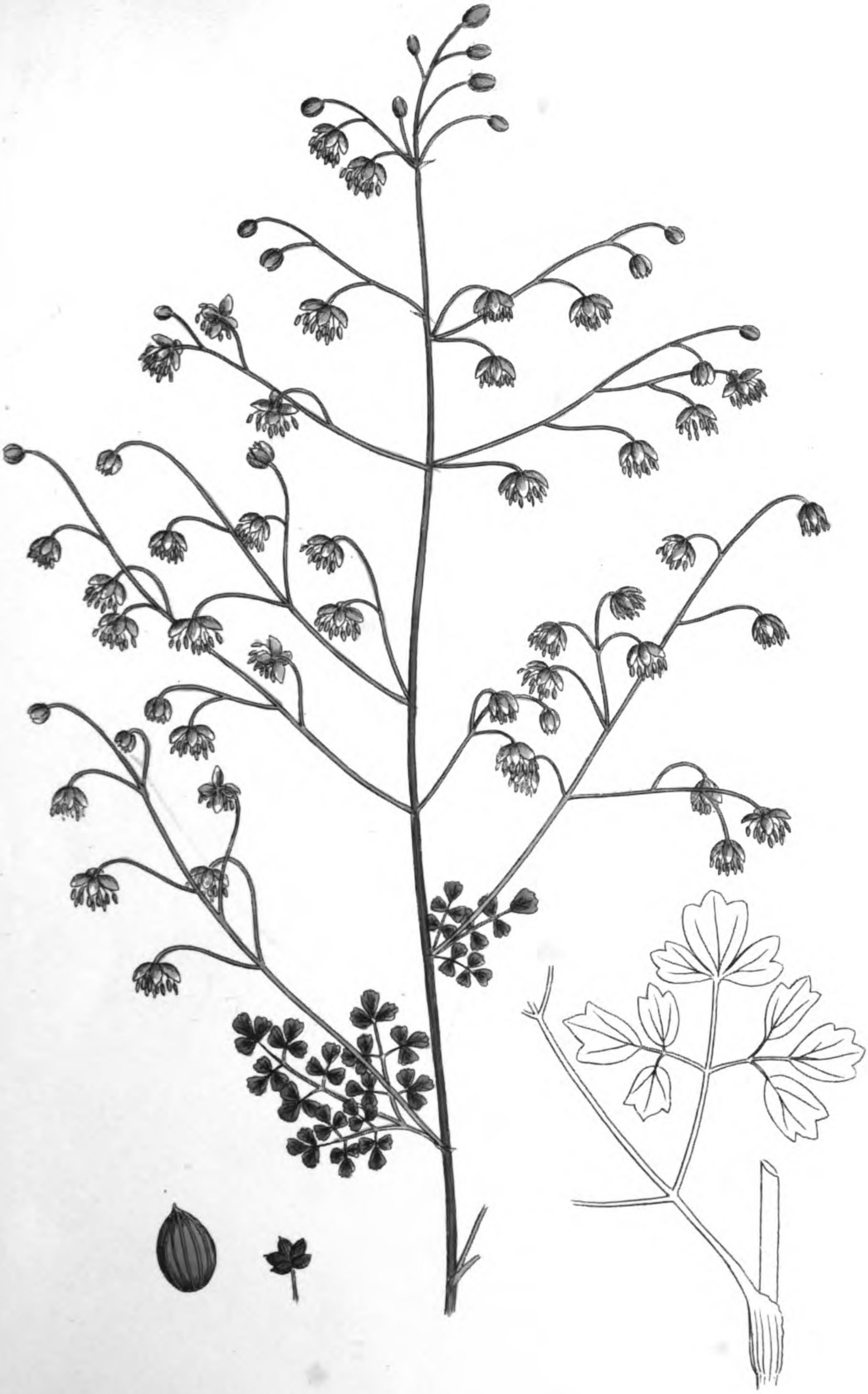
Thalictrum minus, montanum. Lesser Meadow Rue. *var* β



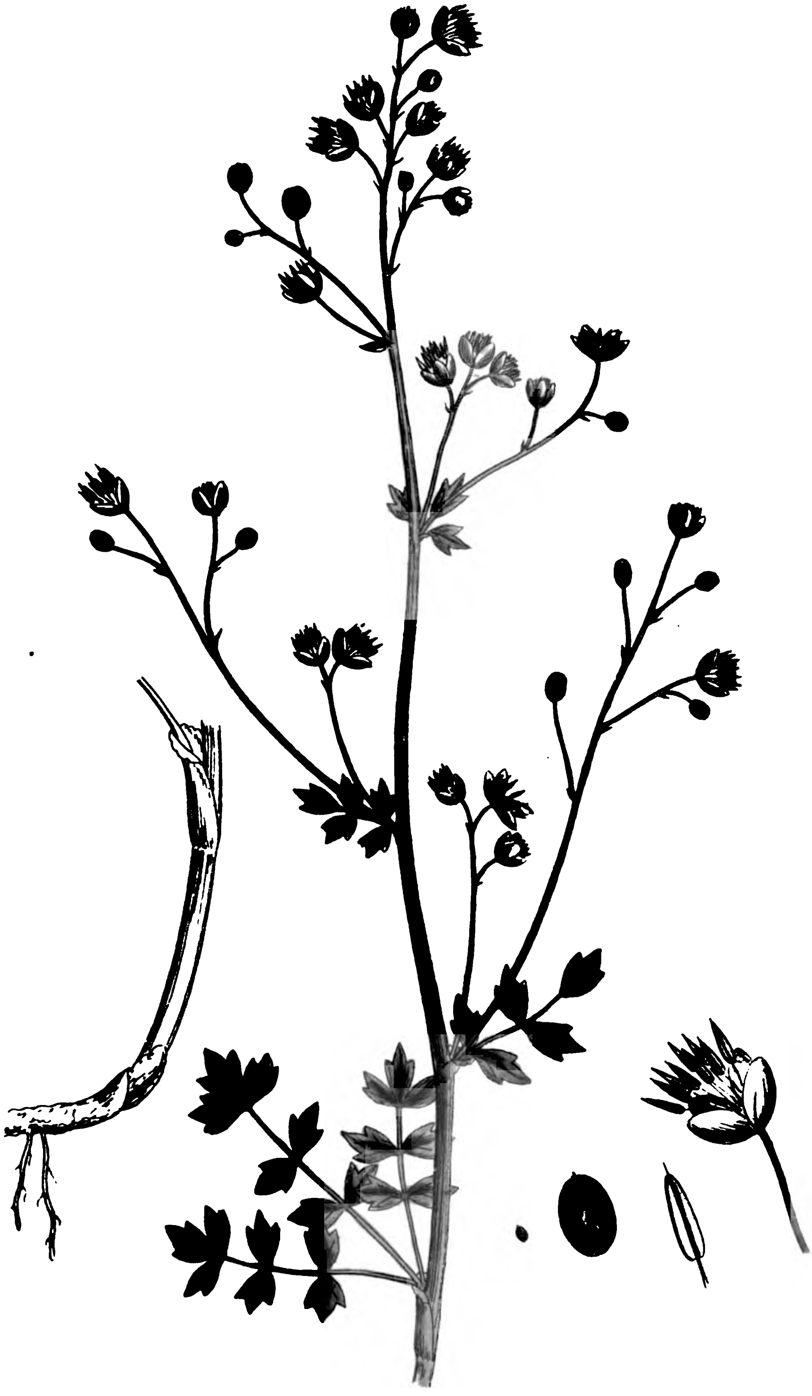
E. B. 611.

Thalictrum flexuosum. Zigzag Meadow Rue.

VI.

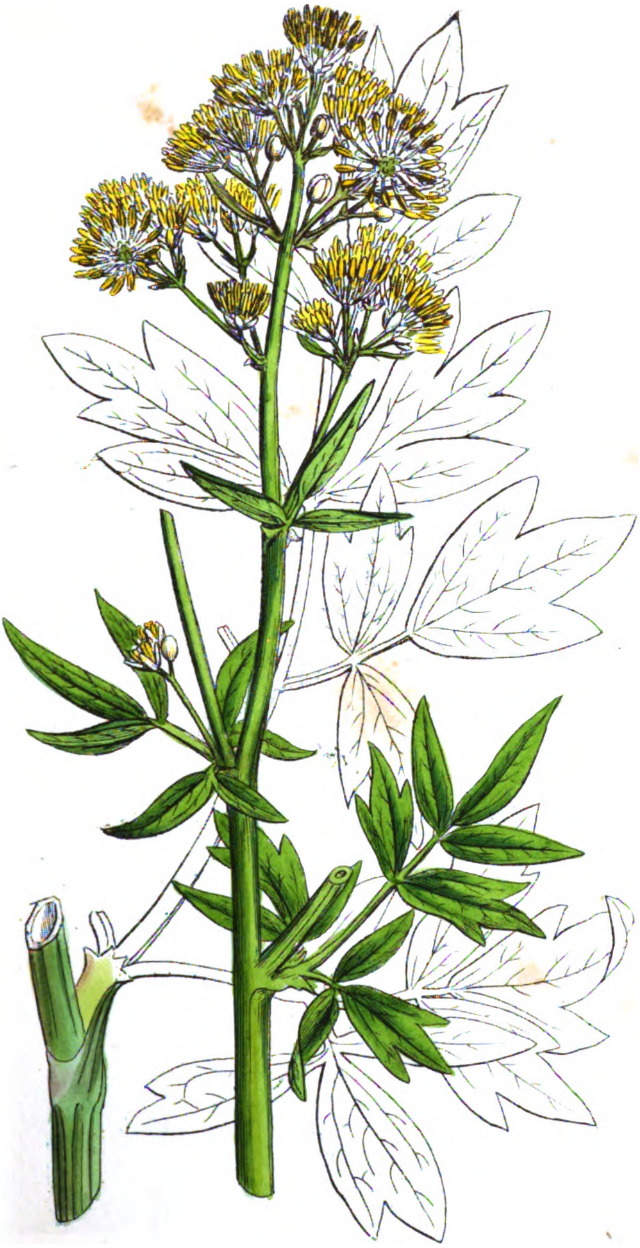


Thalictsum Kochii Koch's Meadow Rue



Thalictsum Saxatile. Stone Meadow Rue

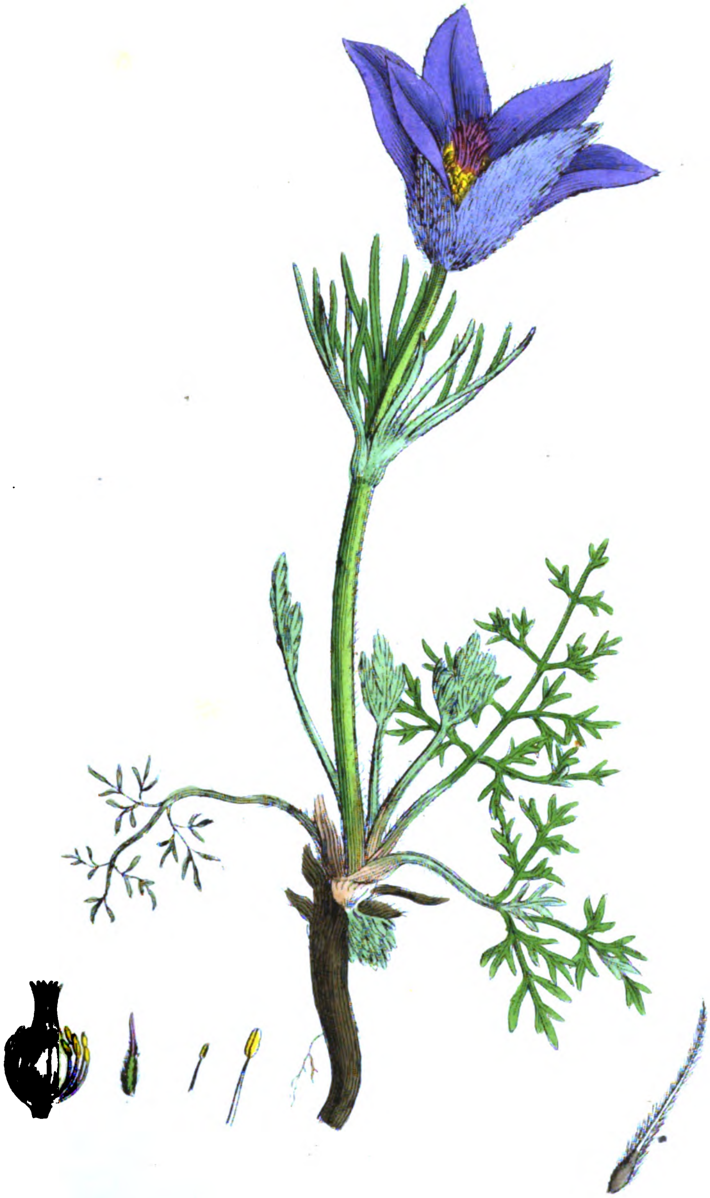
VIII.



E.B. 367.

Thalictrum flavum. Common Meadow Rue.

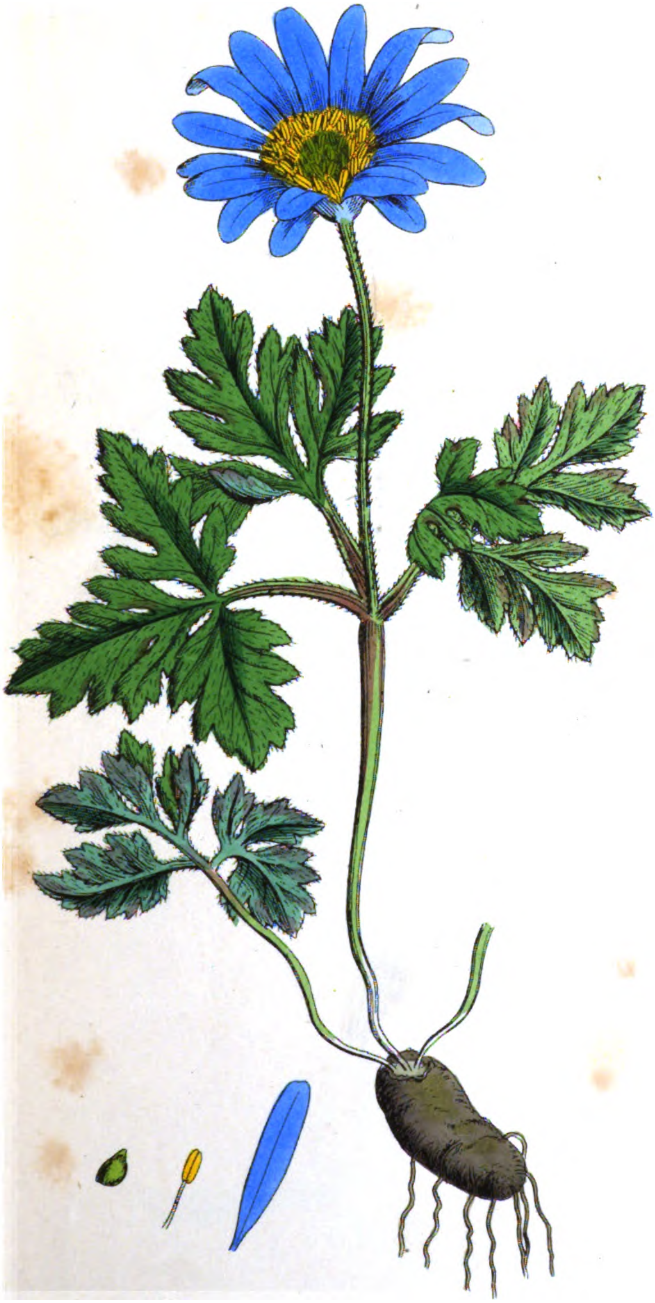
IX.



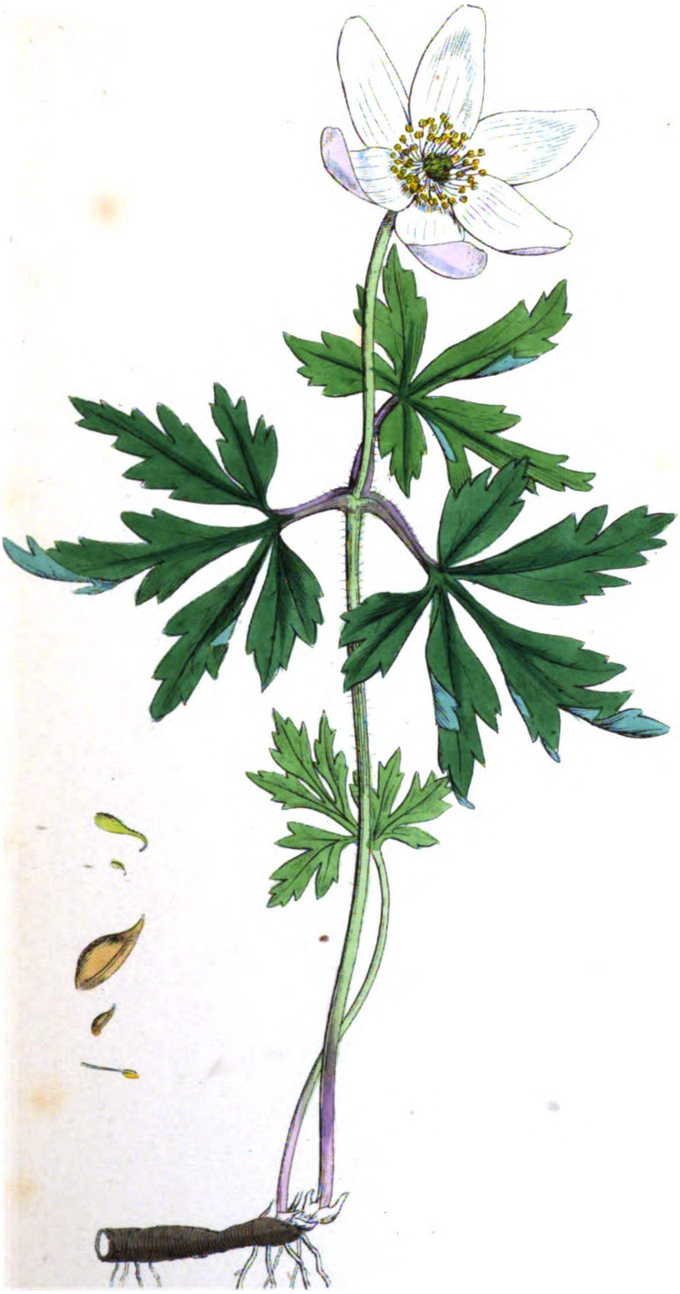
E. B. 51.

Anemone Pulsatilla. Pasque-flower Anemone.

X.



Anemone Apennina. **Blue Mountain Anemone.**



E B 355.

Anemone nemorosa. Wood Anemone.

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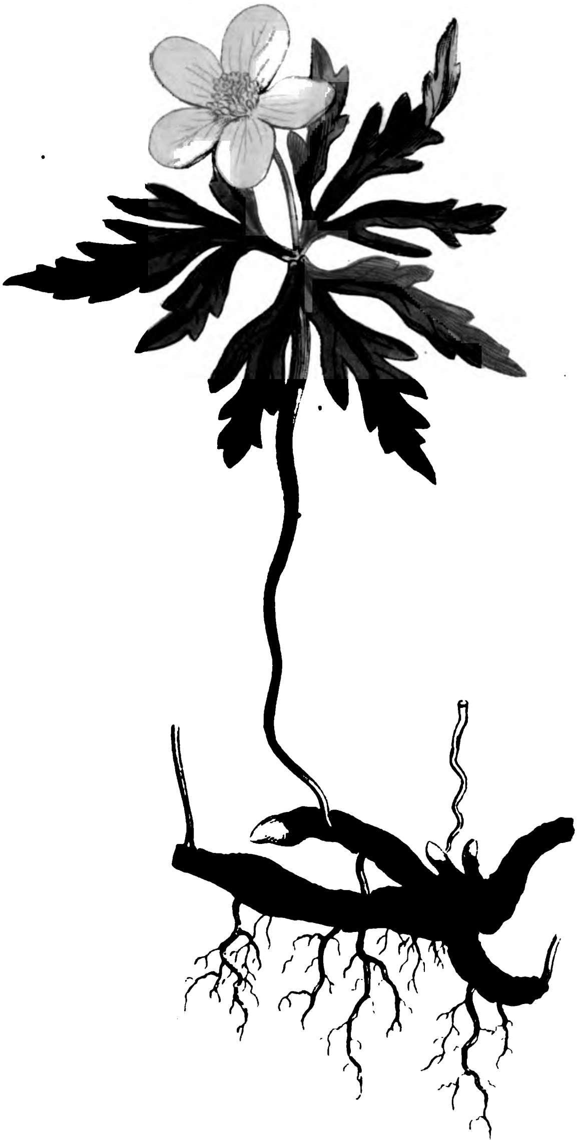
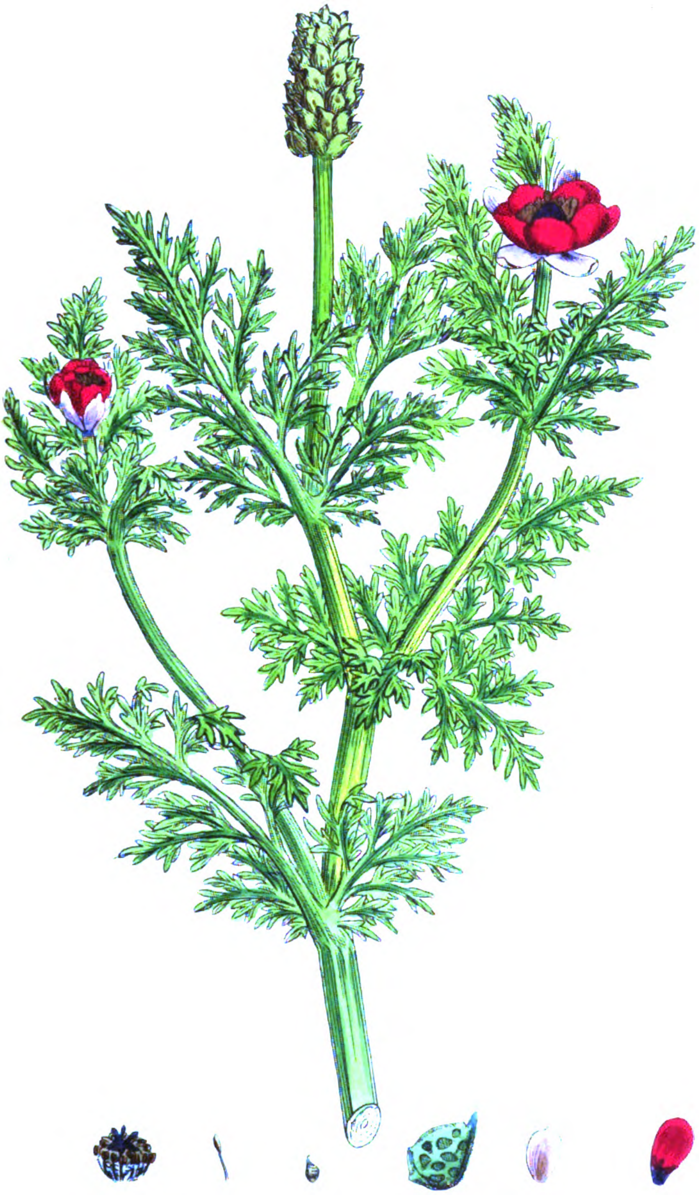


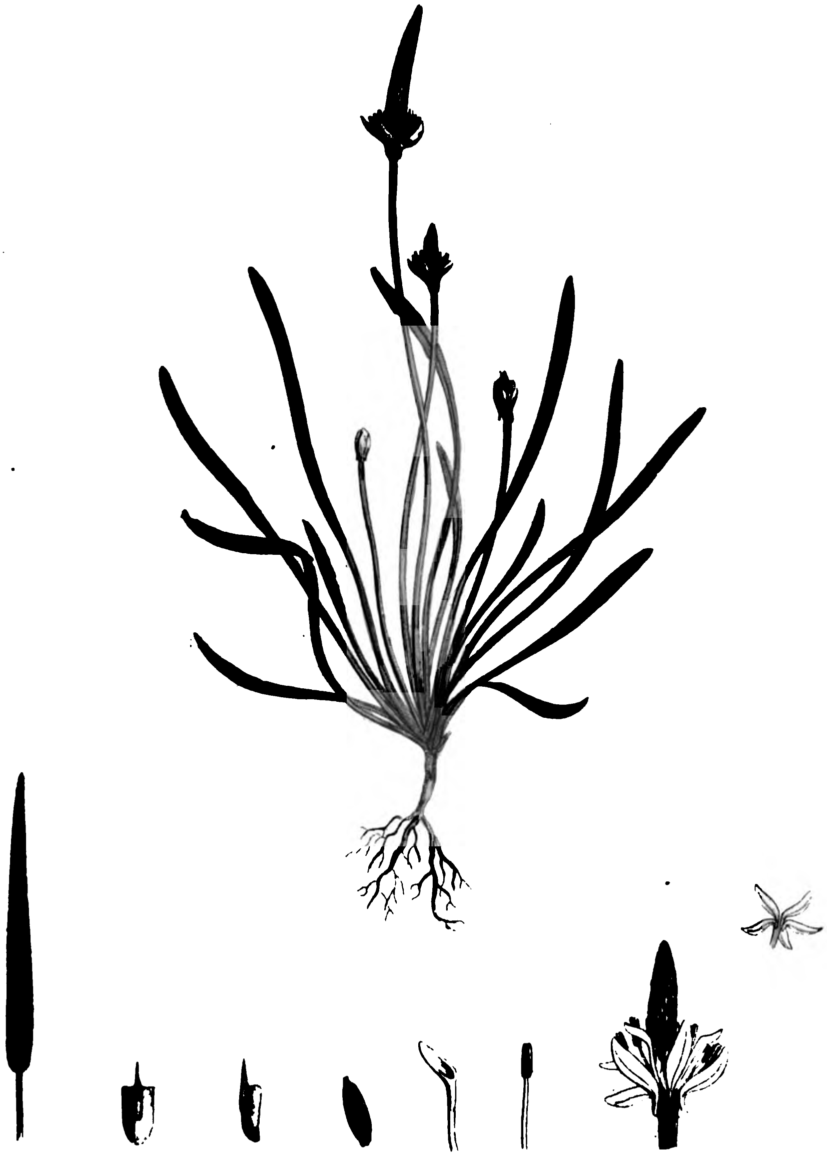
E. B. 1484.

Anemone ranunculoides. **Yellow Wood Anemone.**



E. B. 308.

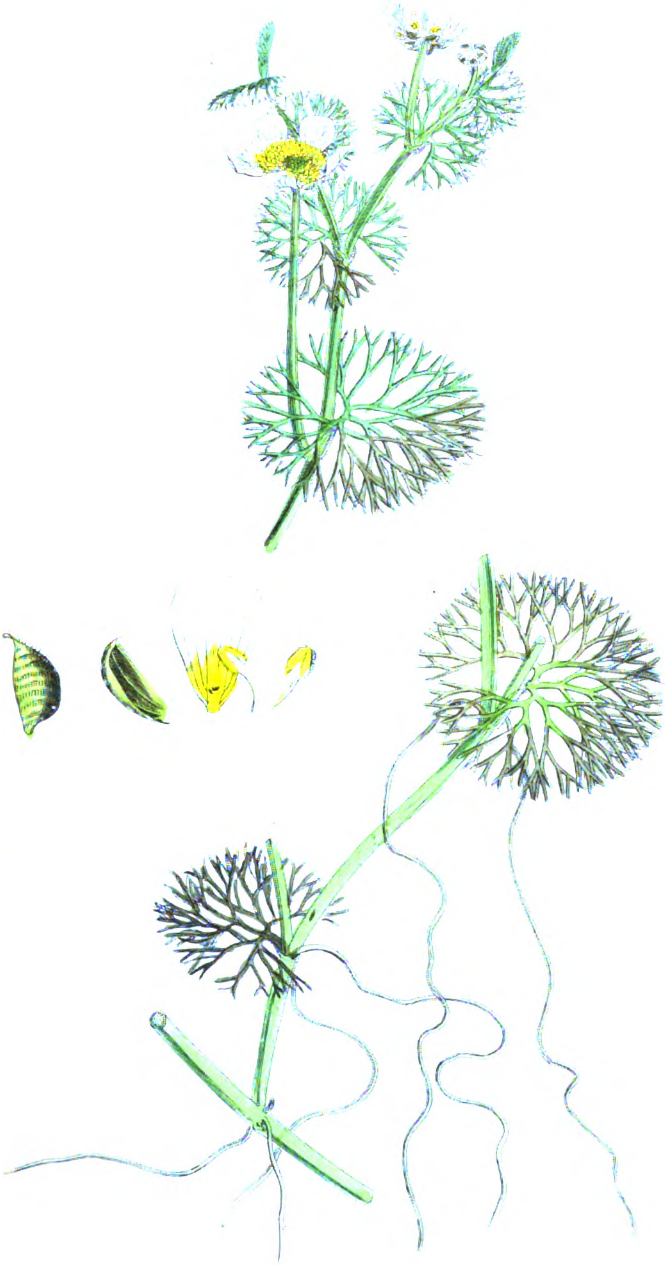
Adonis autumnalis. Common Pheasant's-eye.



E.B. 435.

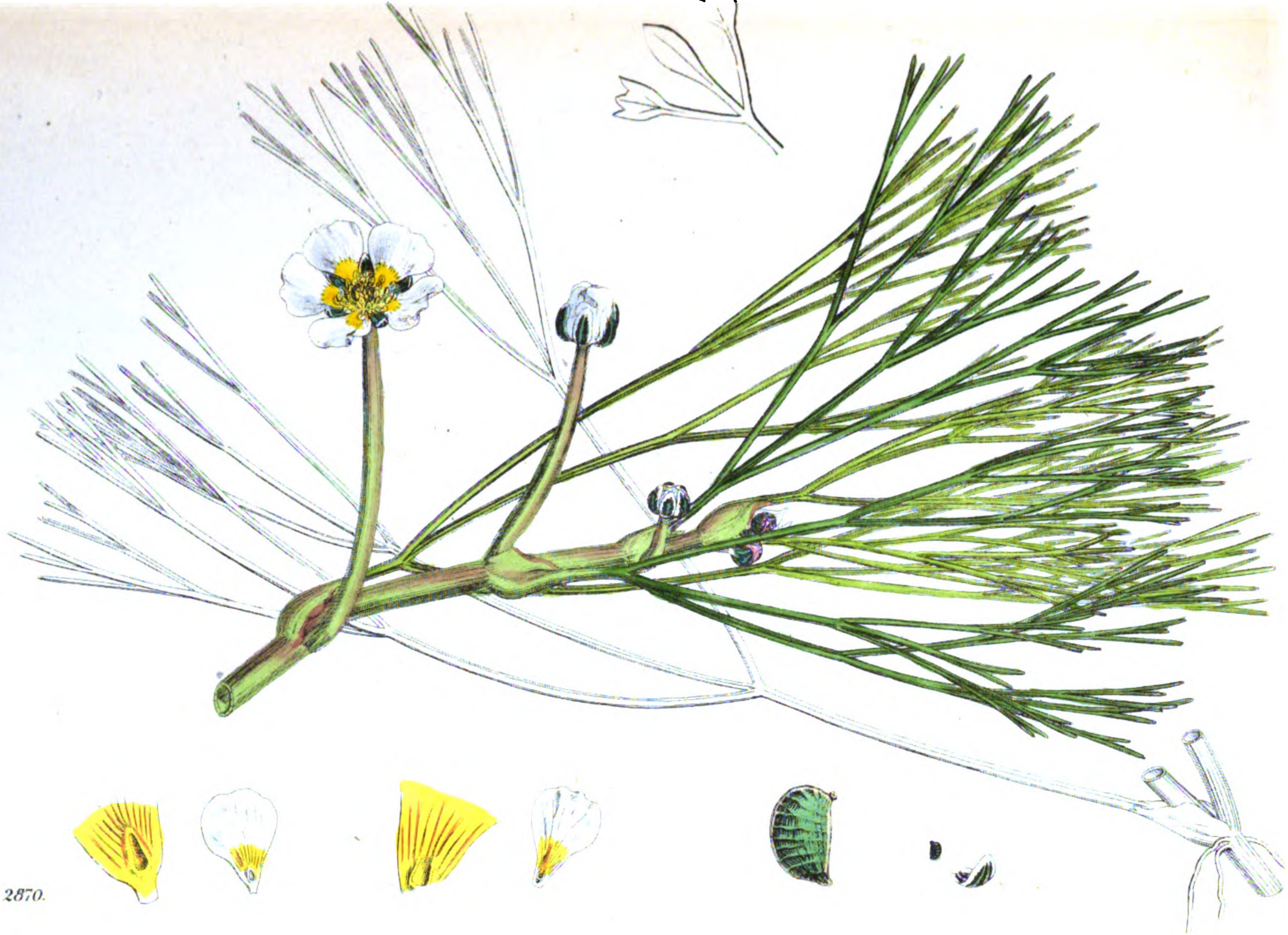
Myosurus minimus. **Common Mouse-tail.**

XV.



E. B. S. 2869.

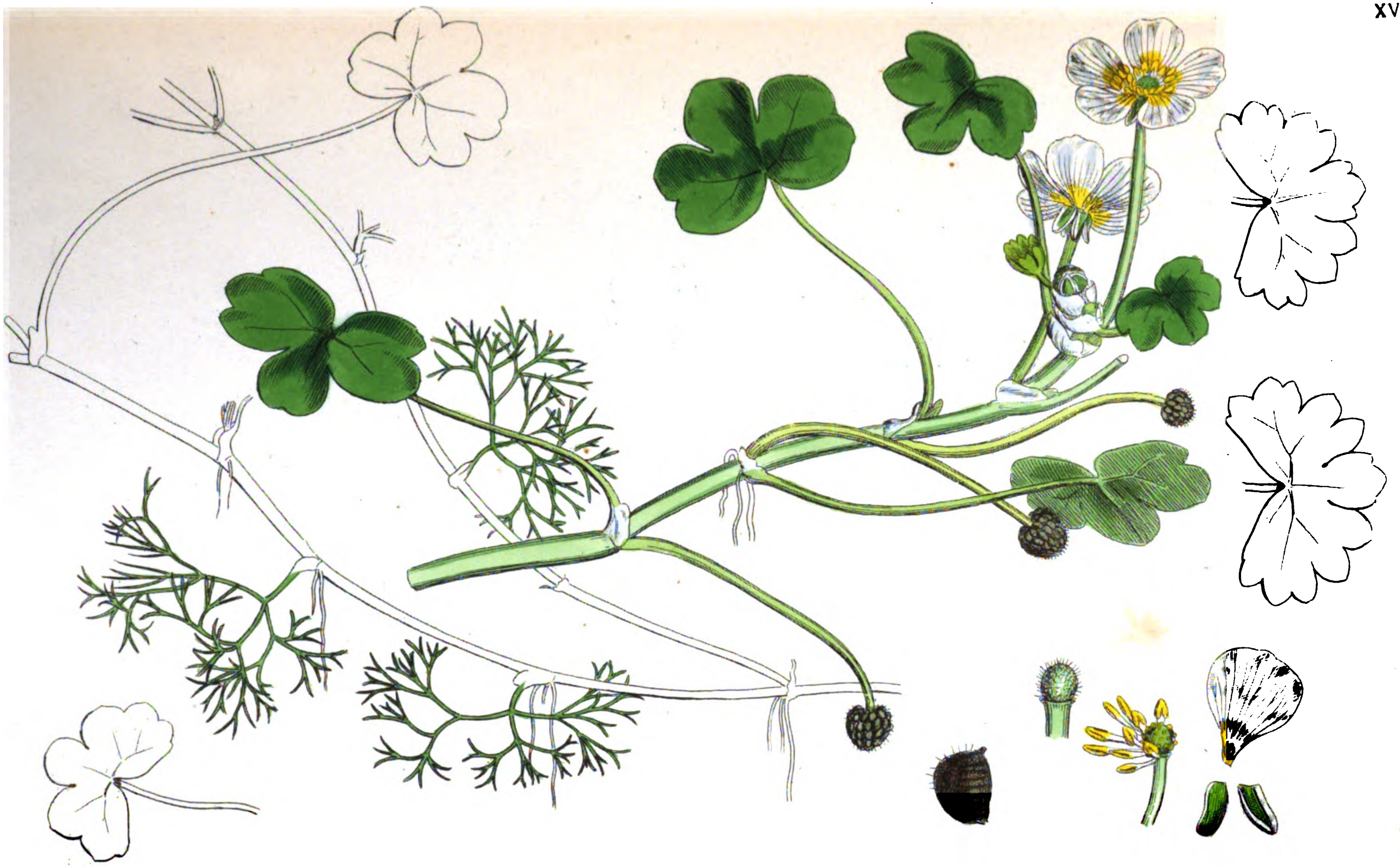
Ranunculus circinatus. Rigid-leaved Water-crowfoot



E. B. S. 2870.

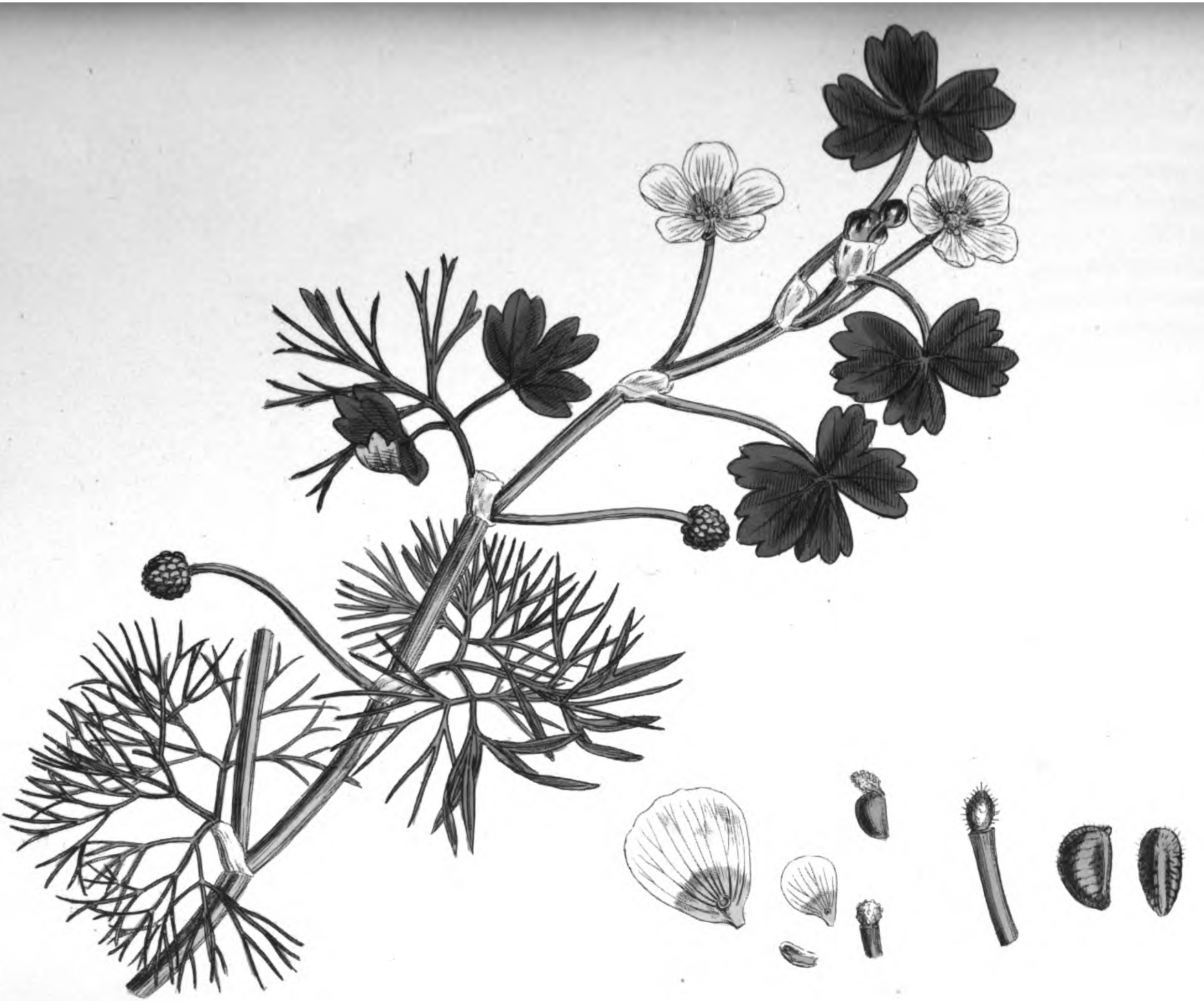
Ranunculus fluitans. River Water-crowfoot.

XVII.



E. B. S. 2965.

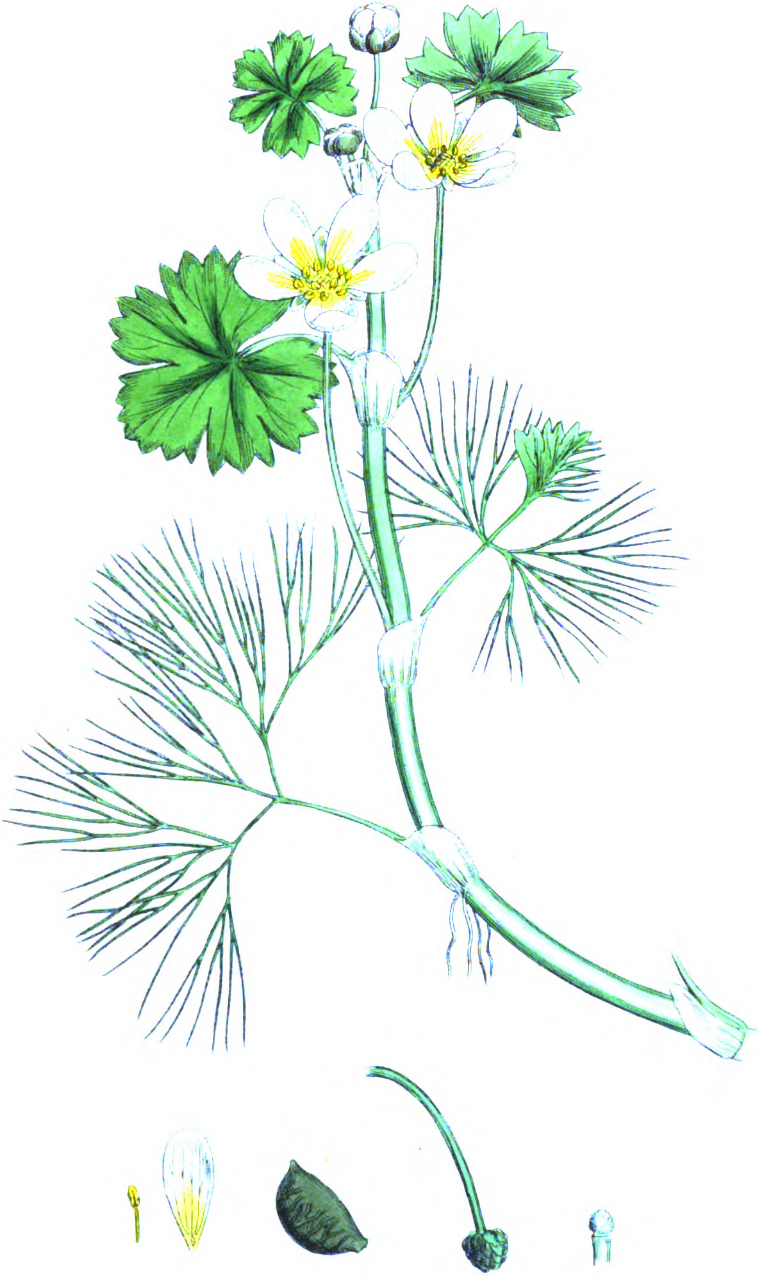
Ranunculus peltatus vulgaris. Common Water-crowfoot. *var* α



E. B. S. 2969.

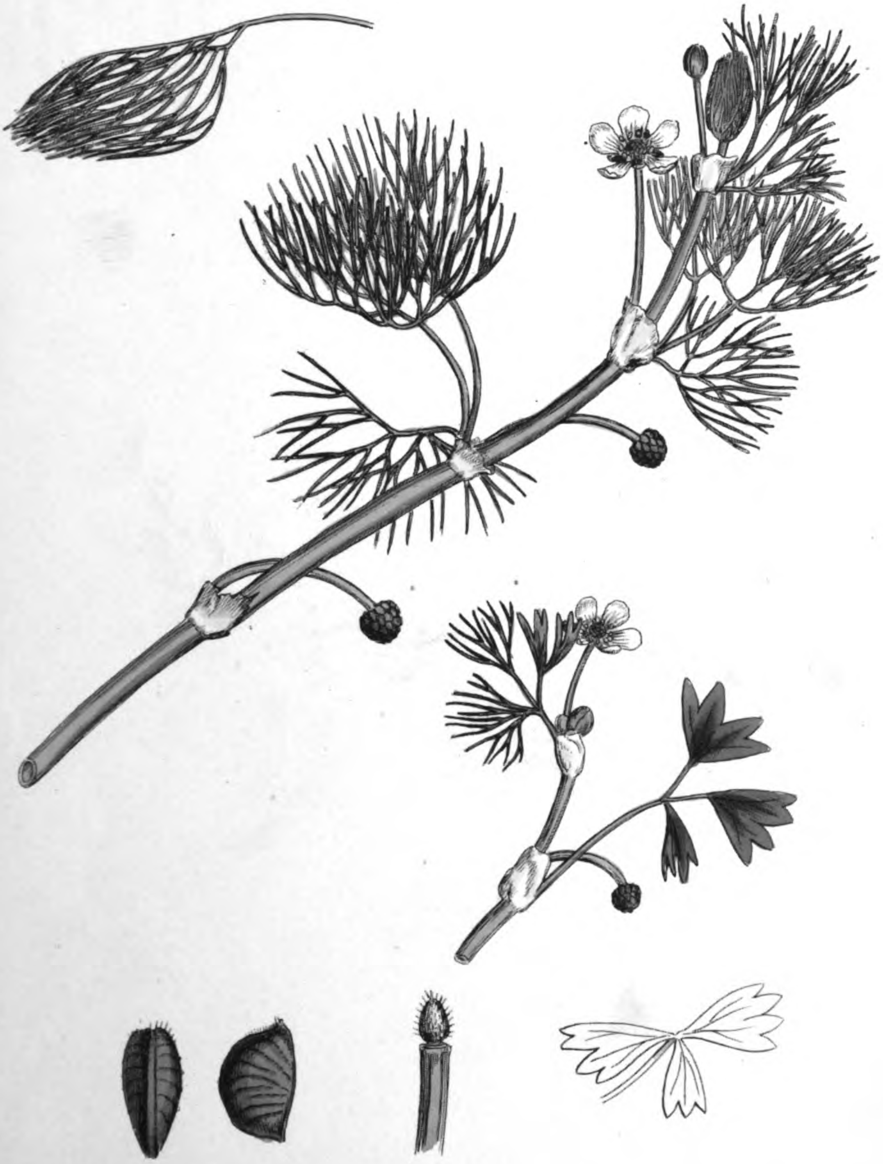
Ranunculus peltatus floribundus. Common Water-crowfoot. *var β*

XIX.



Ranunculus heterophyllus. Various leaved Water-crowfoot.

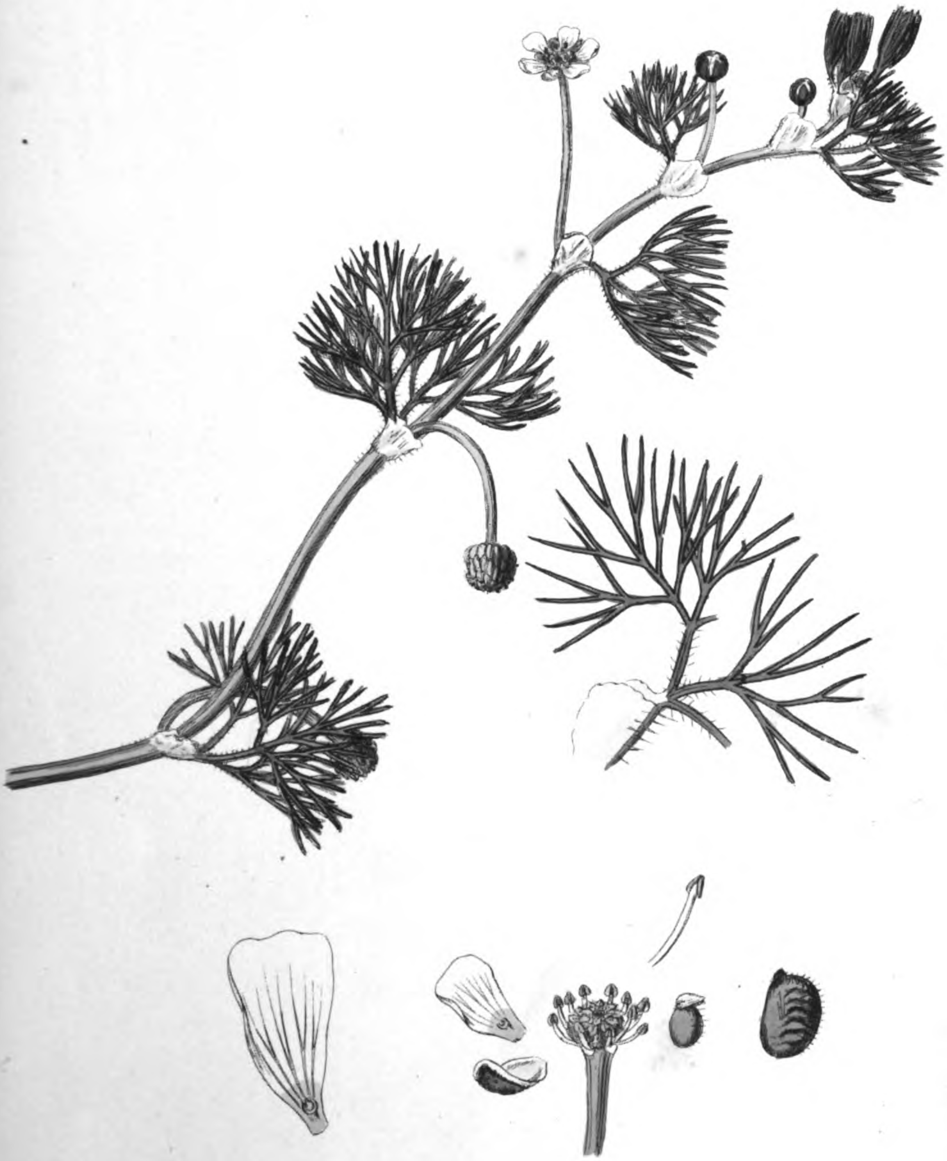
XX.



E. B. S. 2967.

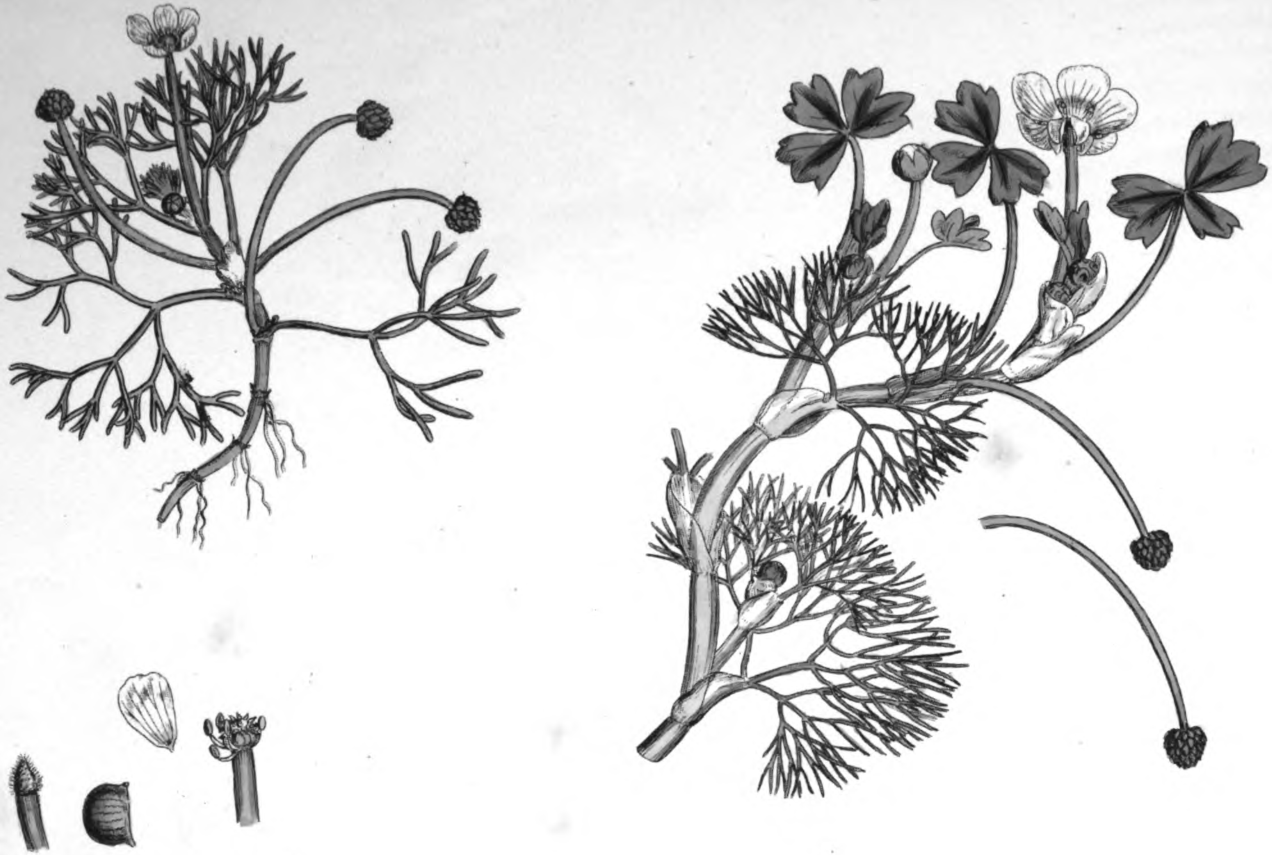
Ranunculus Drouetii. Drouet's Water-crowfoot.

XXI.



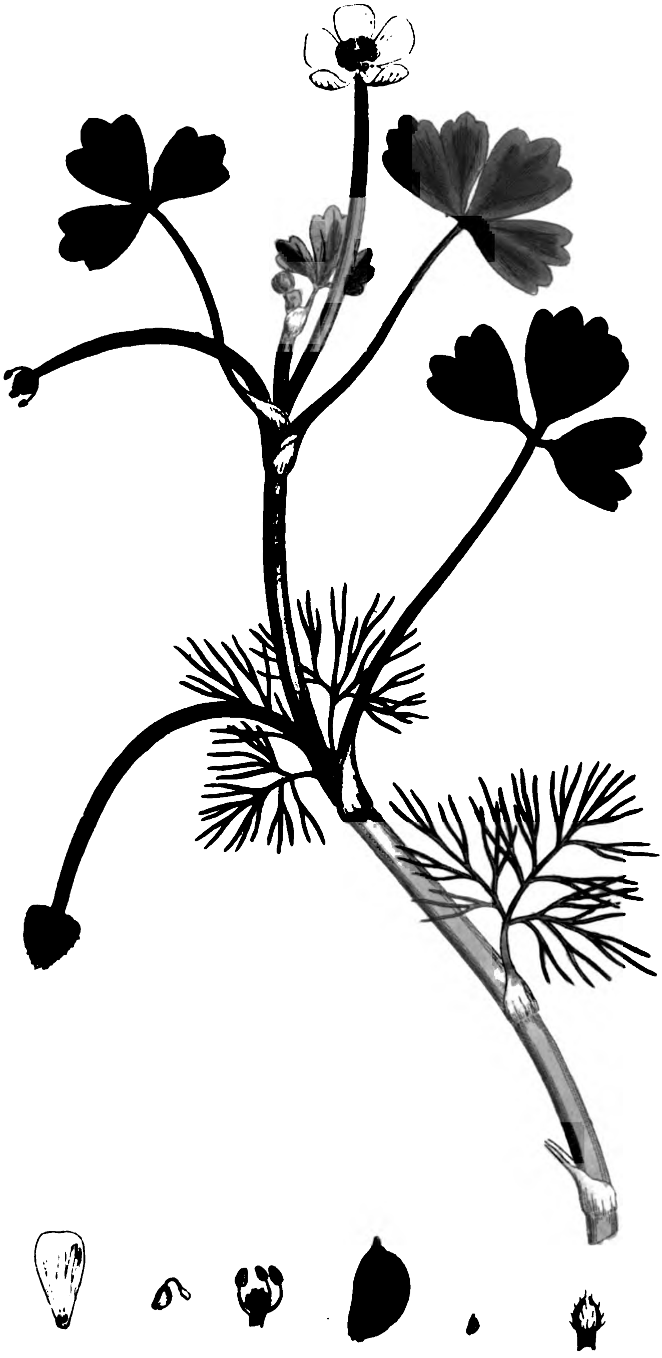
E. B. S. 2968.

Ranunculus trichophyllus. Hair-leaved Water-crowfoot



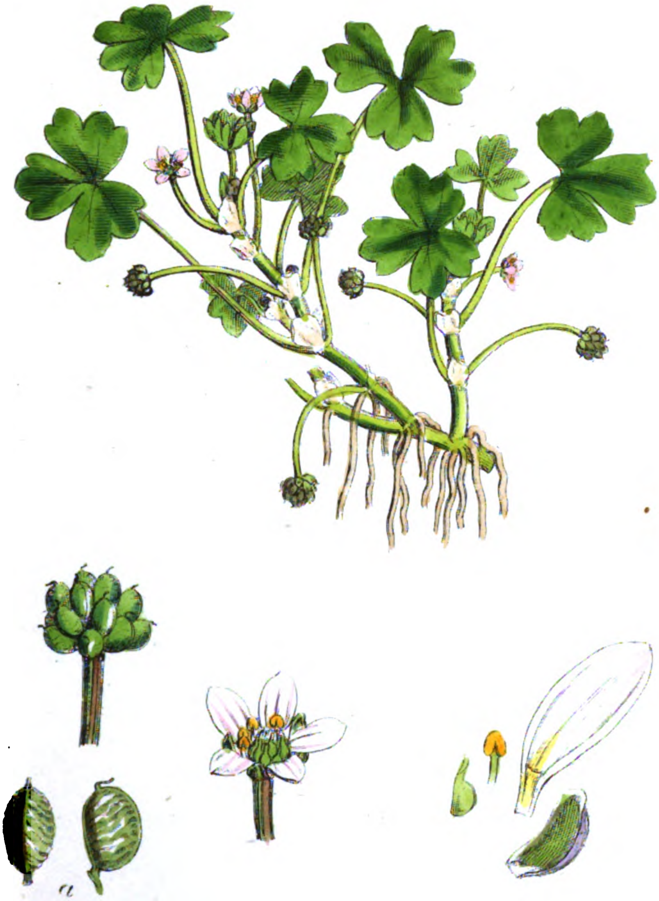
E. B. S. 2966.

Ranunculus Bæudotii vulgaris. Baudot's Water-crowfoot. *var* α



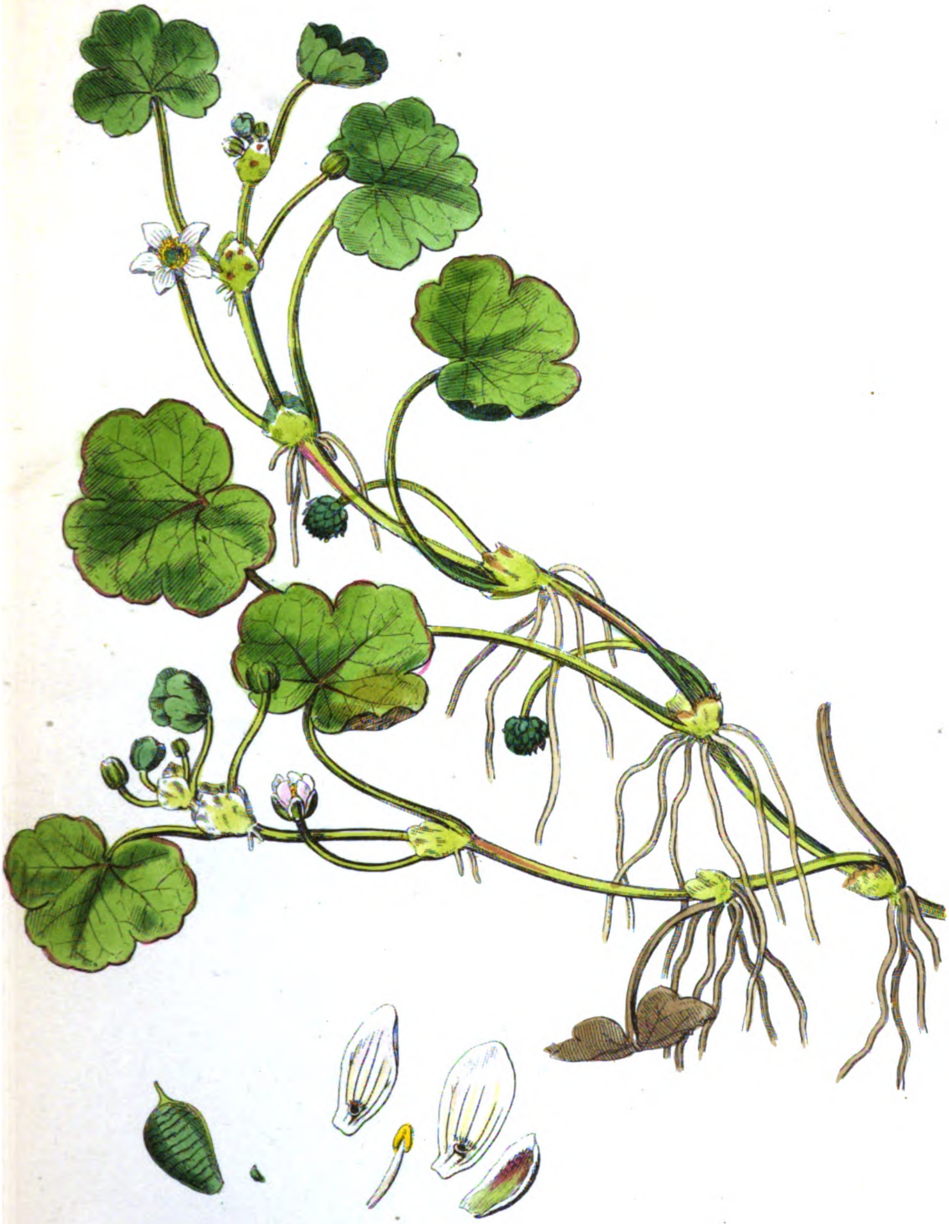
Ranunculus Baudotii β Confusa.

XXIV.



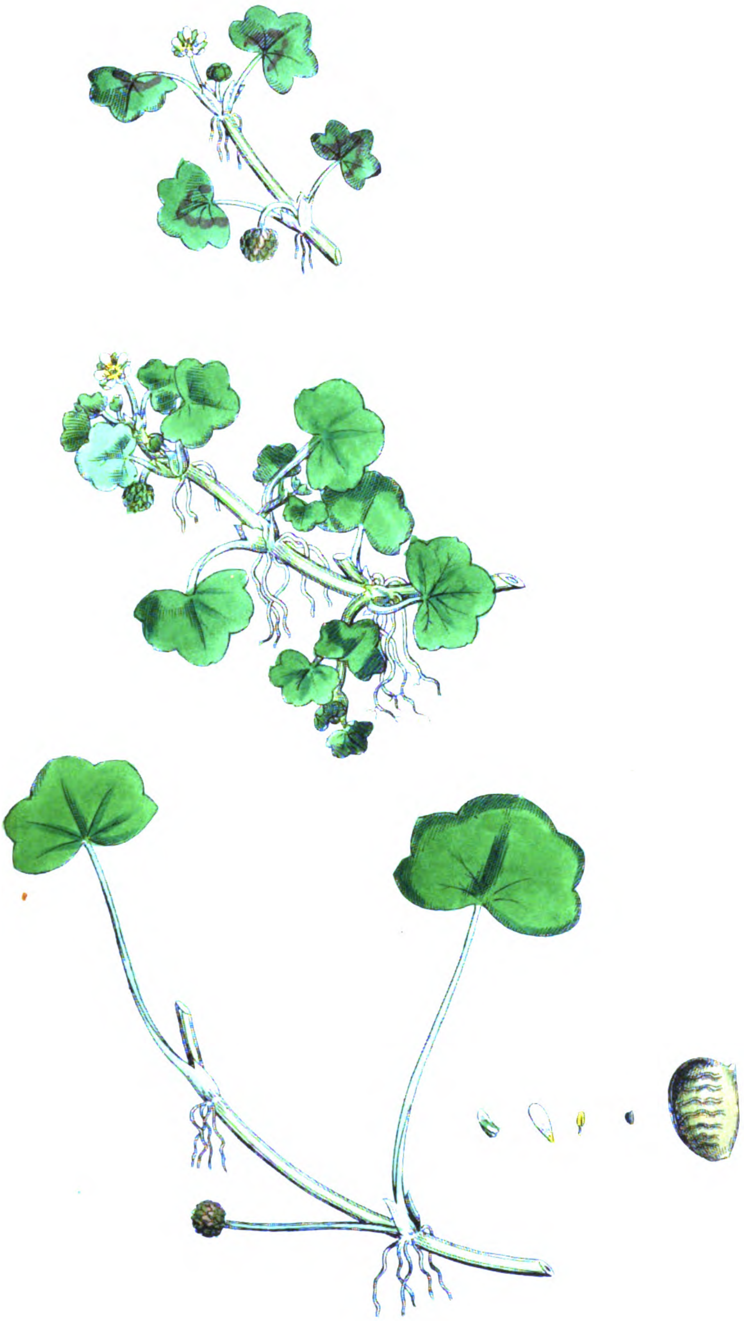
E.B.S. 2946.

Ranunculus tripartitus. Three-lobed Water-crowfoot.

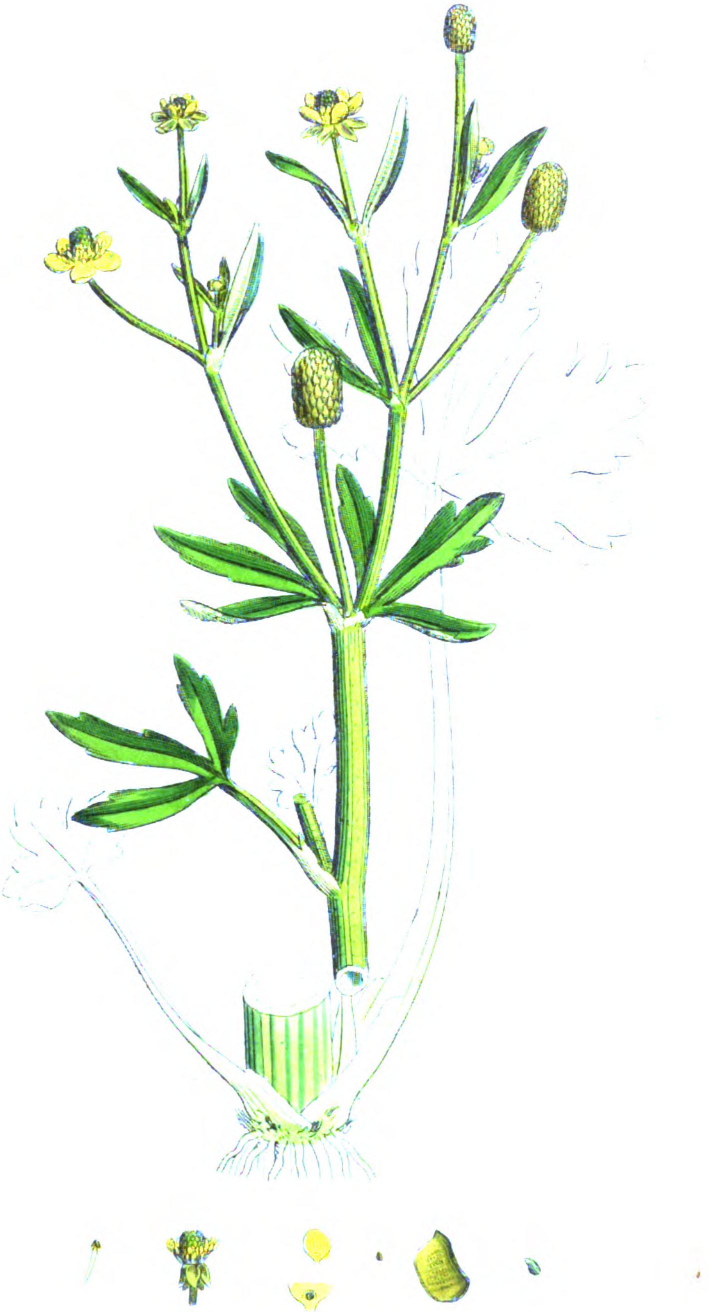


E.B.S. 2930.

Ranunculus Lenormandi. Lenormand's Water-crowfoot.

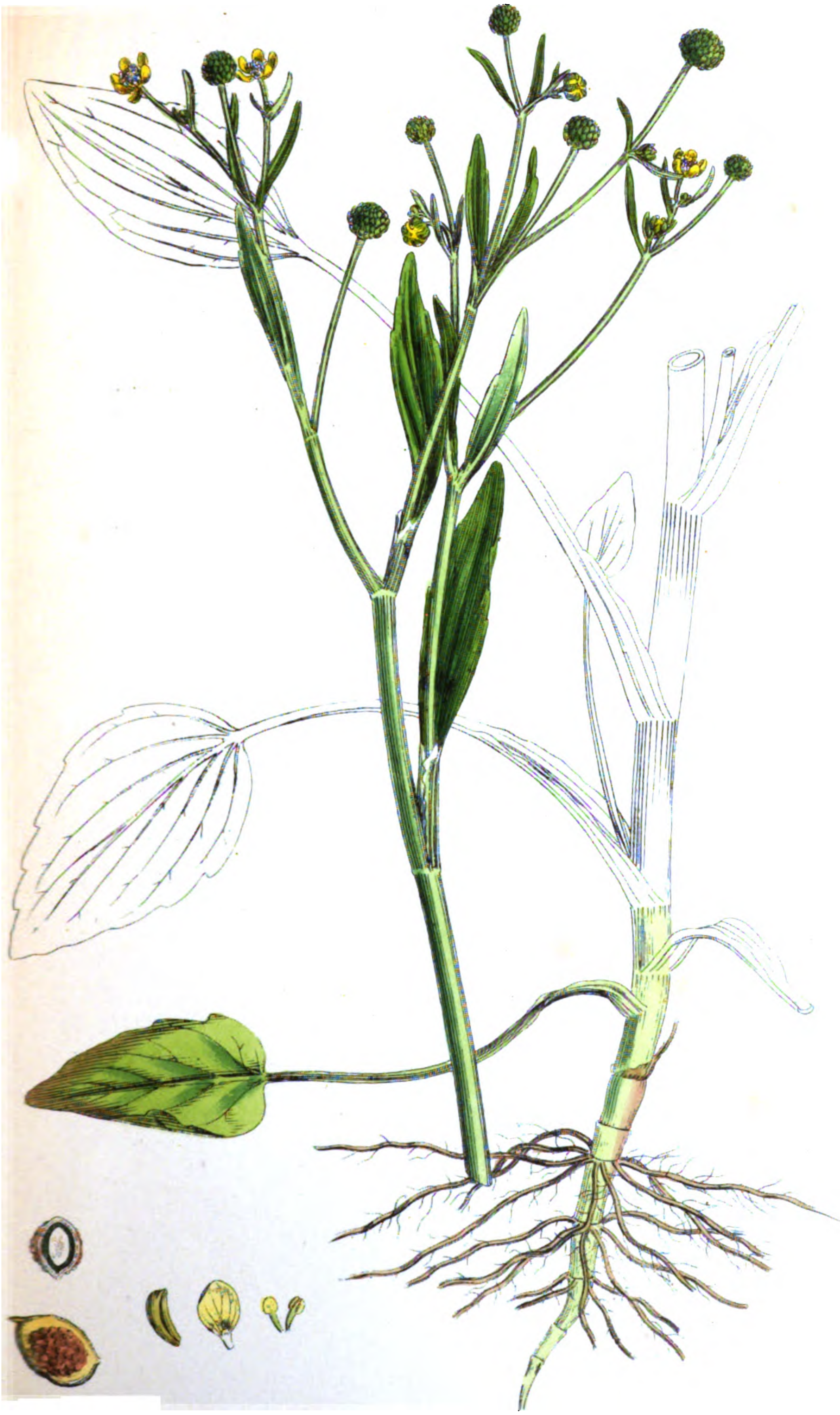


Ranunculus hederaceus. Ivy-leaved Water-crowfoot.



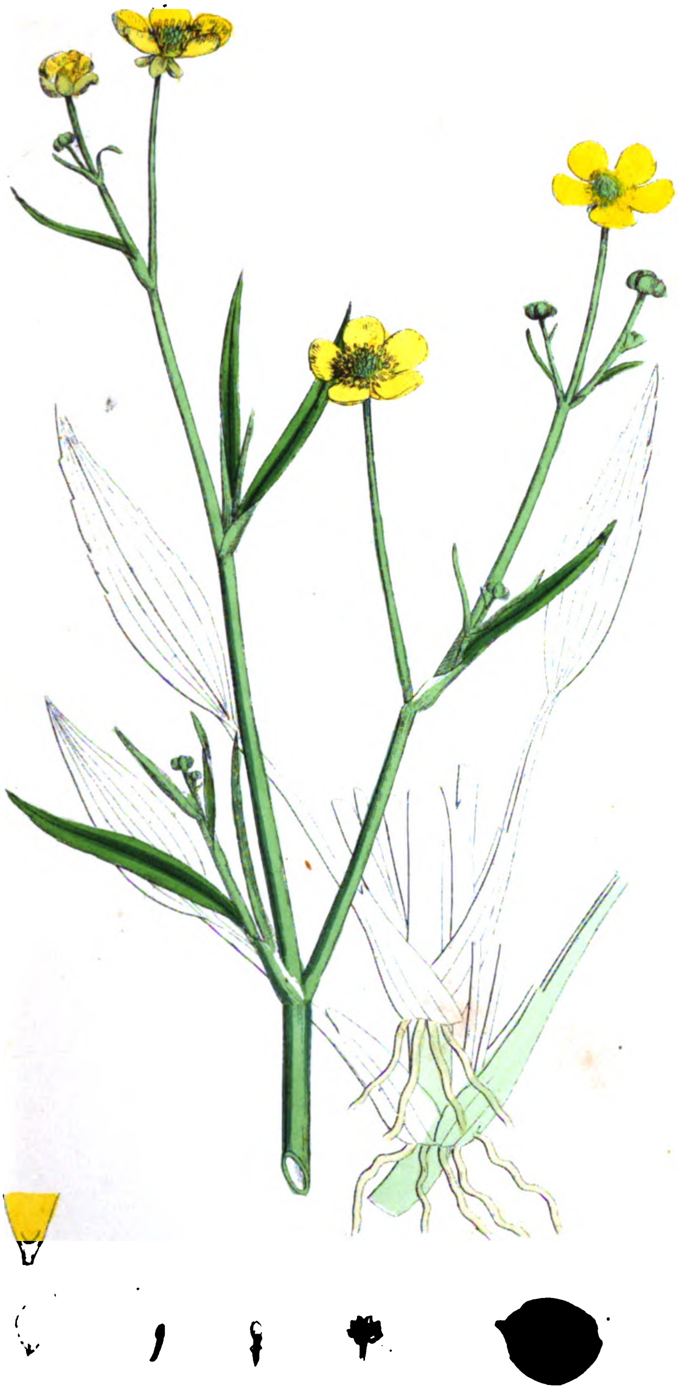
E. B. 681.

Ranunculus sceleratus. Celery-leaved Water-crowfoot.



2833.

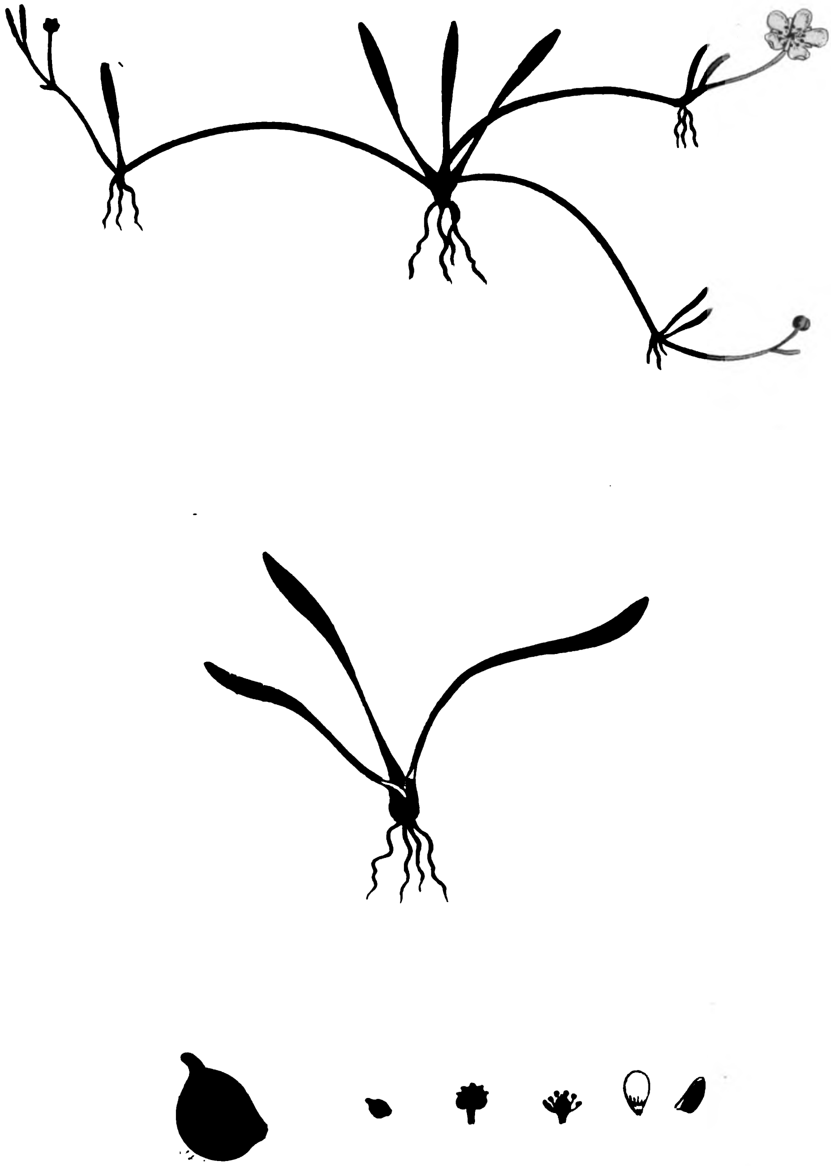
Ranunculus ophioglossifolius. Adder's tongue-leaved Crowfoot.



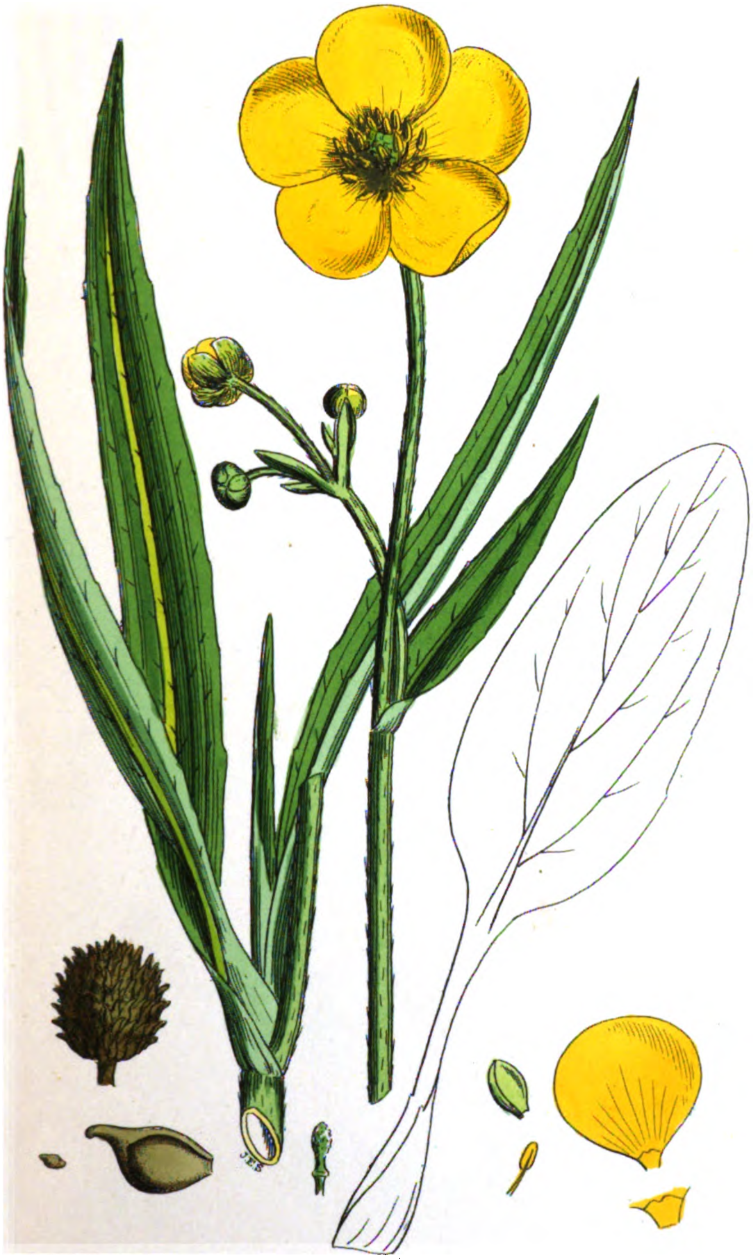
E. B. 387.

Ranunculus eu-Flammula. Lesser Spearwort.

XXX.

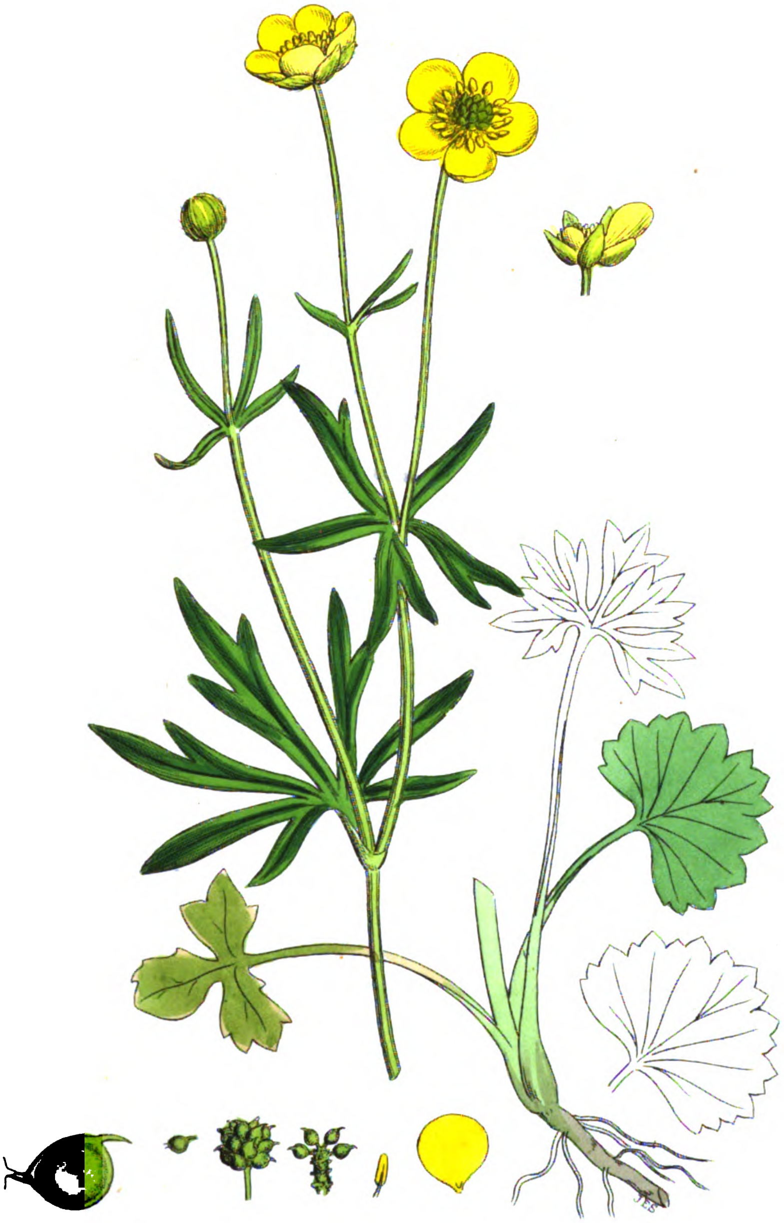


Ramunculus reptans. Creeping Spearwort.



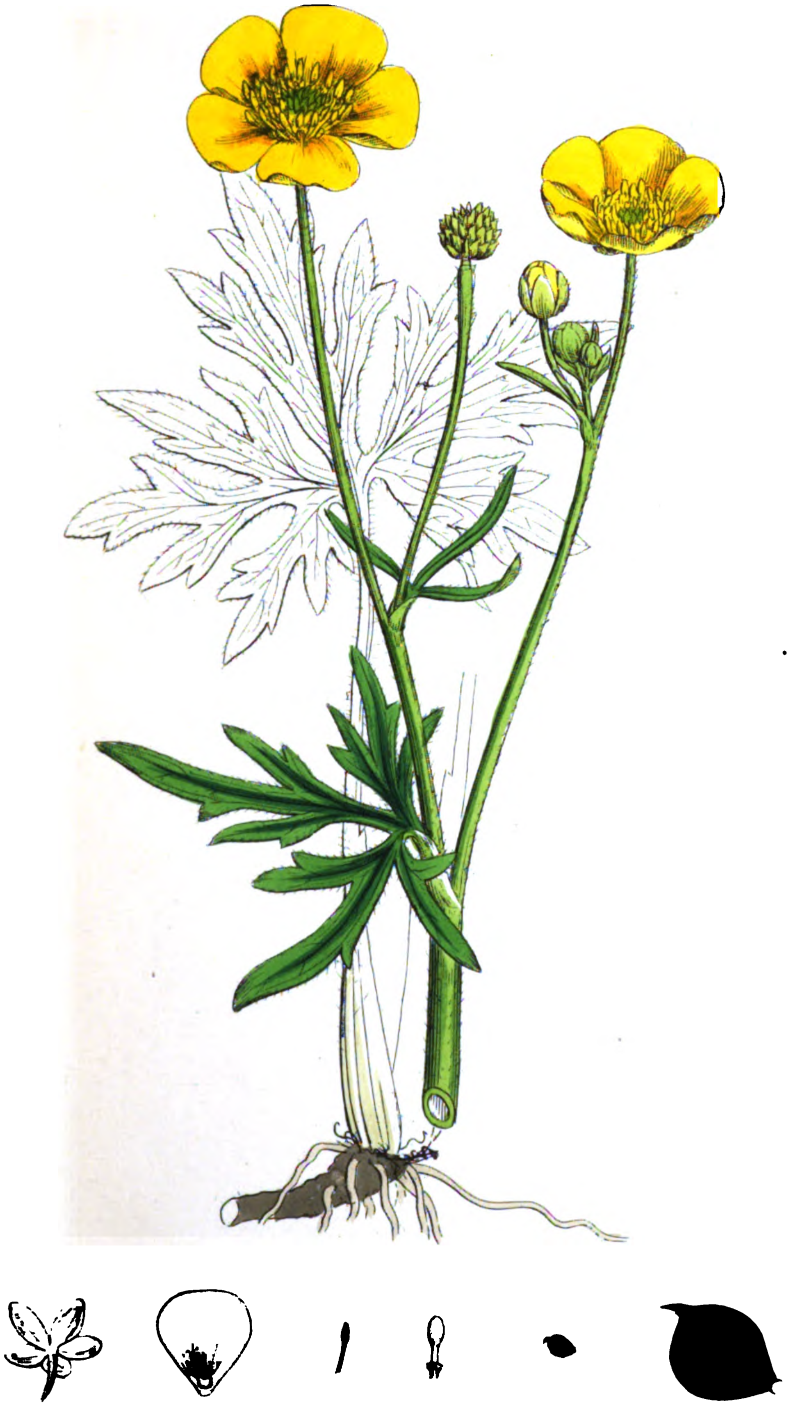
Ranunculus Lingua. **Greater Spearwort.**

XXXII.



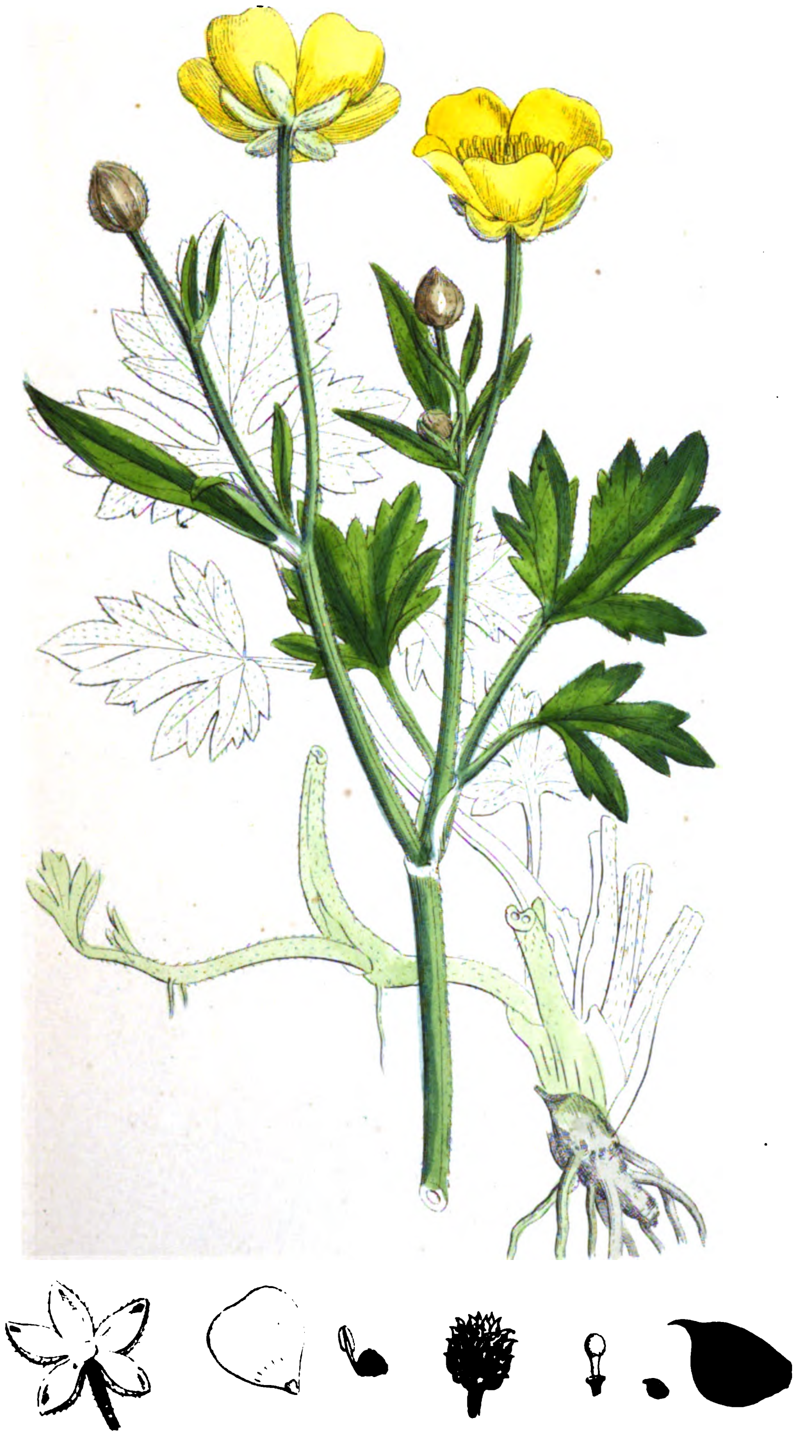
Ranunculus auricornus. Wood Crowfoot.

XXXIII.



B. 652.

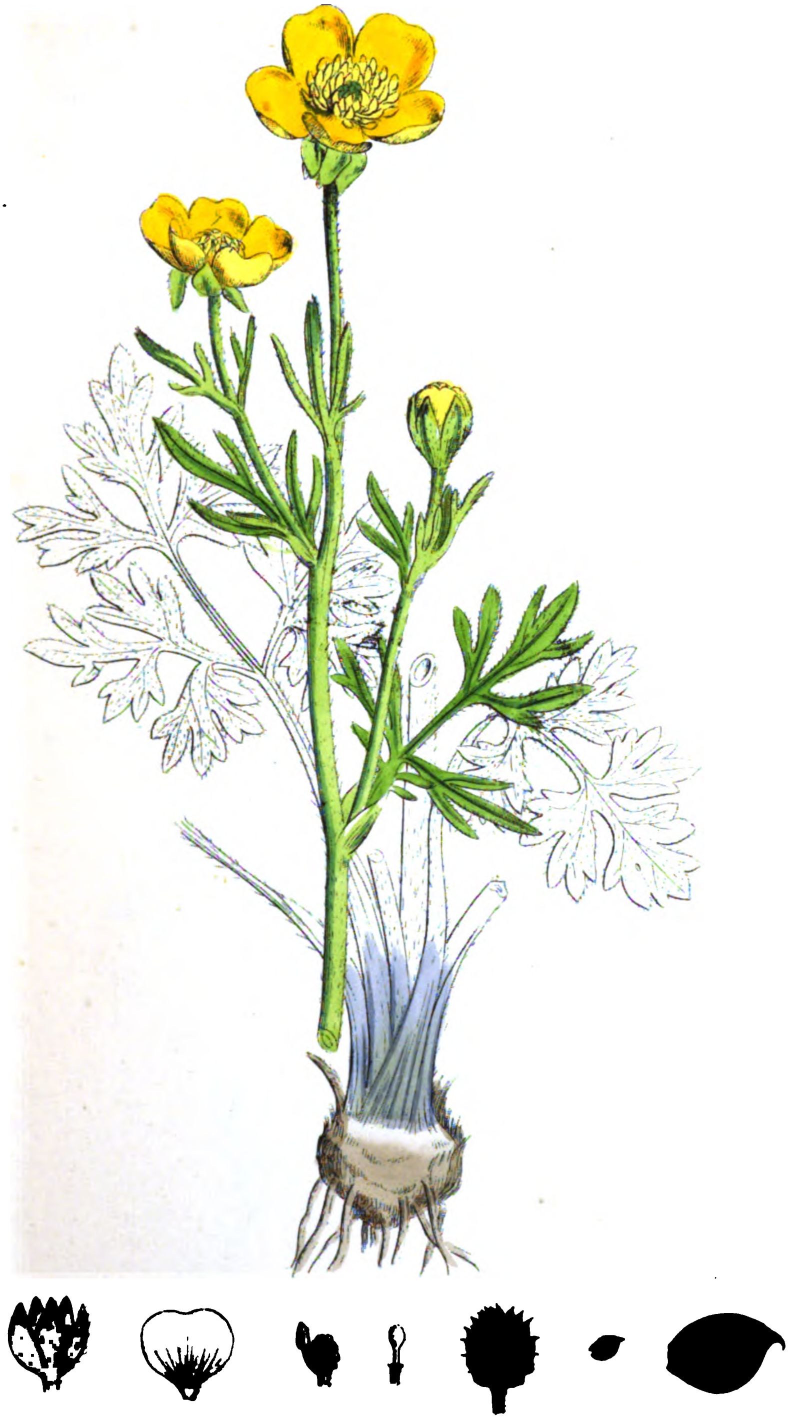
Ranunculus eu-acris. **Upright Meadow Crowfoot.**



E. B. 516.

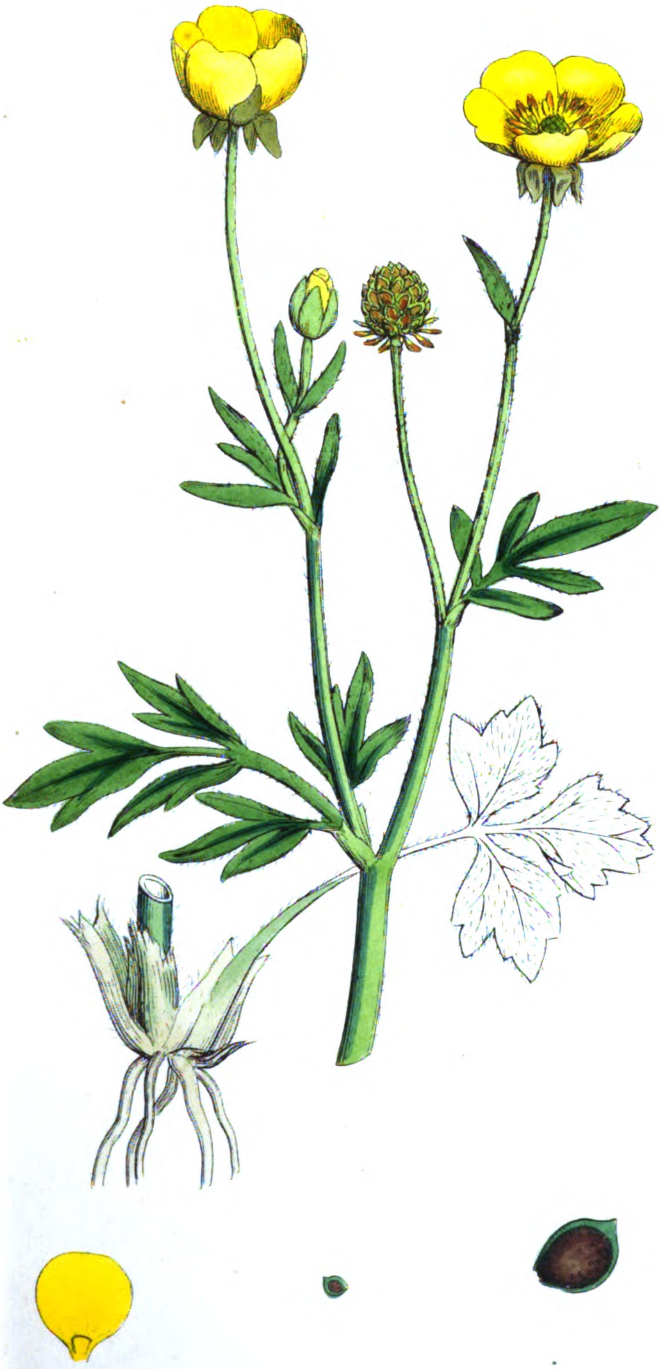
Ranunculus repens. **Creeping Crowfoot.**

XXXV.



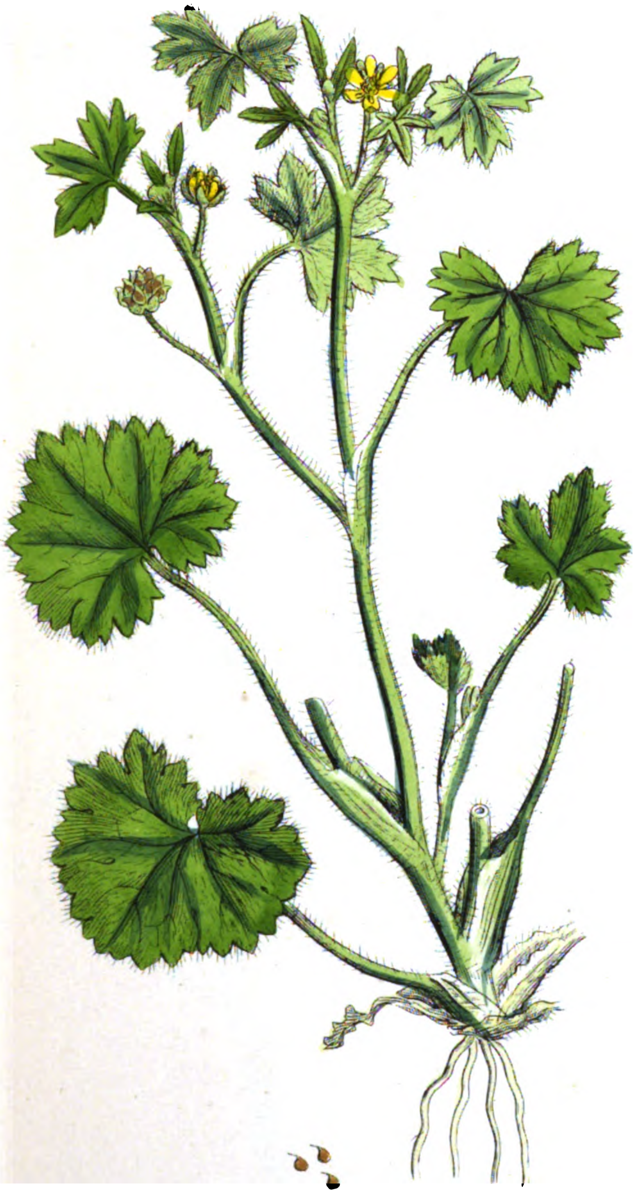
D. 515.

Ranunculus bulbosus. Bulbous Crowfoot.



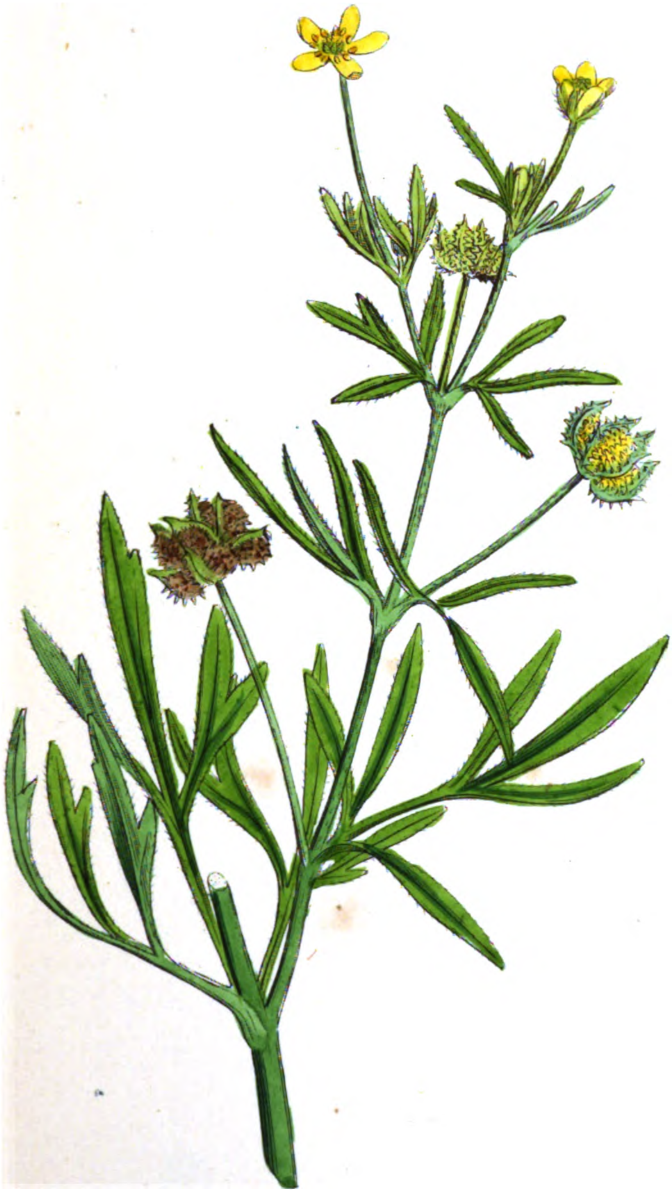
E. B. 1504.

Ranunculus hirsutus. Hairy Crowfoot.



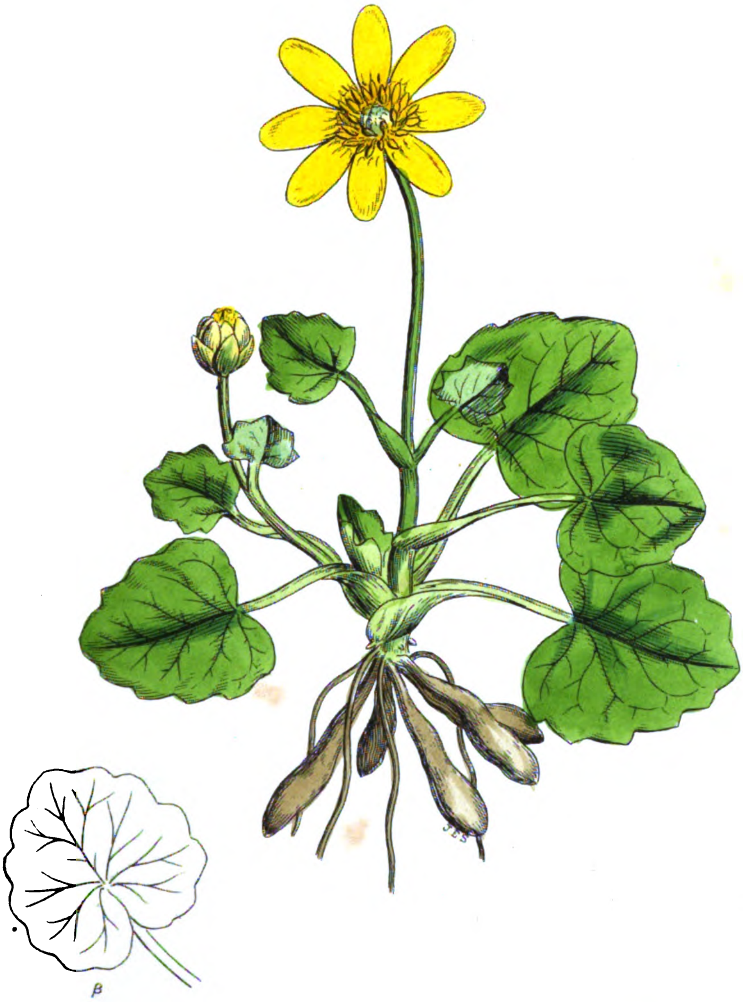
B. 120.

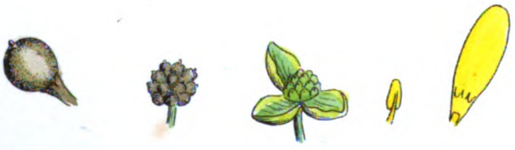
Ranunculus parviflorus. Small flowered Crowfoot.



E. B. 135.

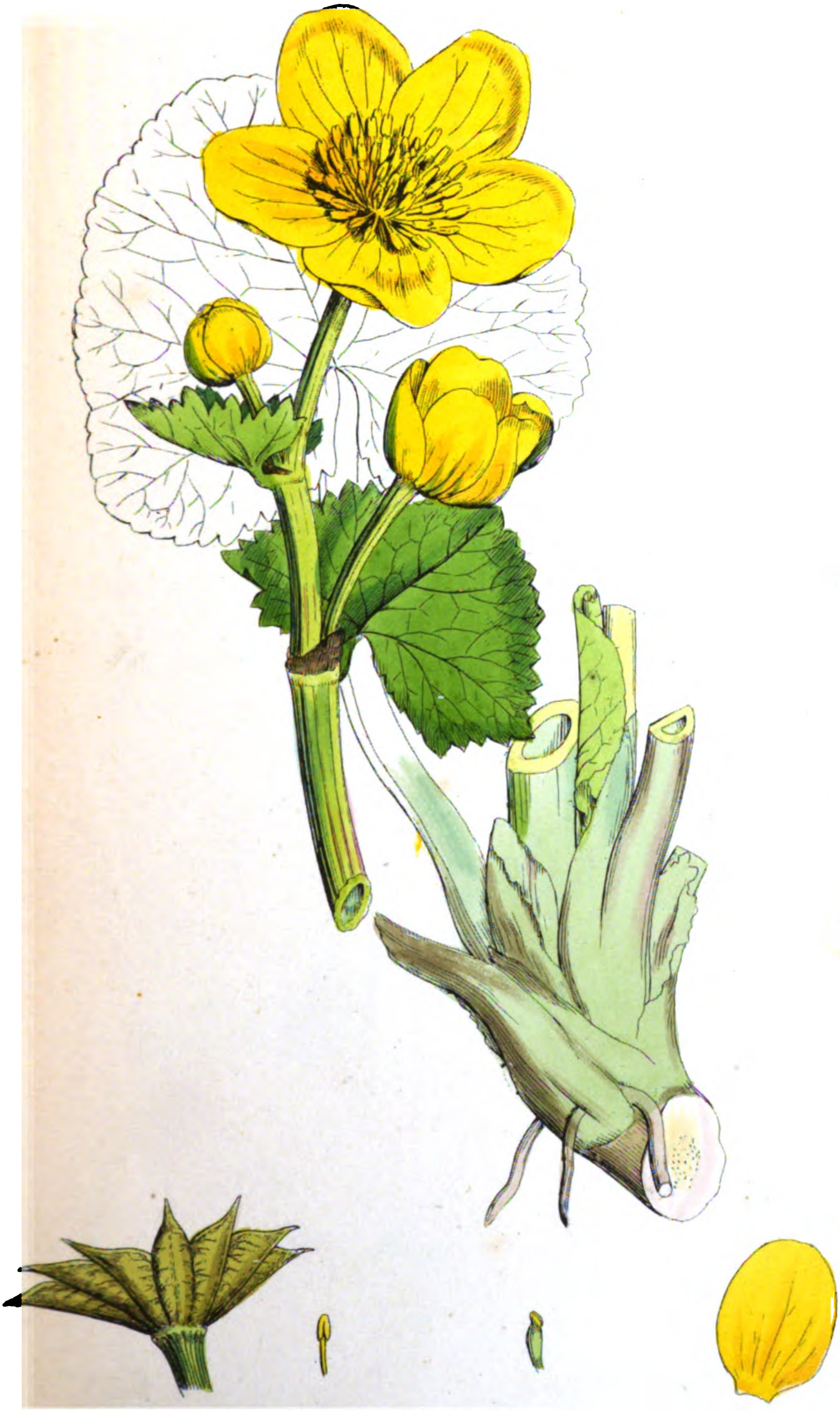
Ranunculus arvensis. Corn Crowfoot.





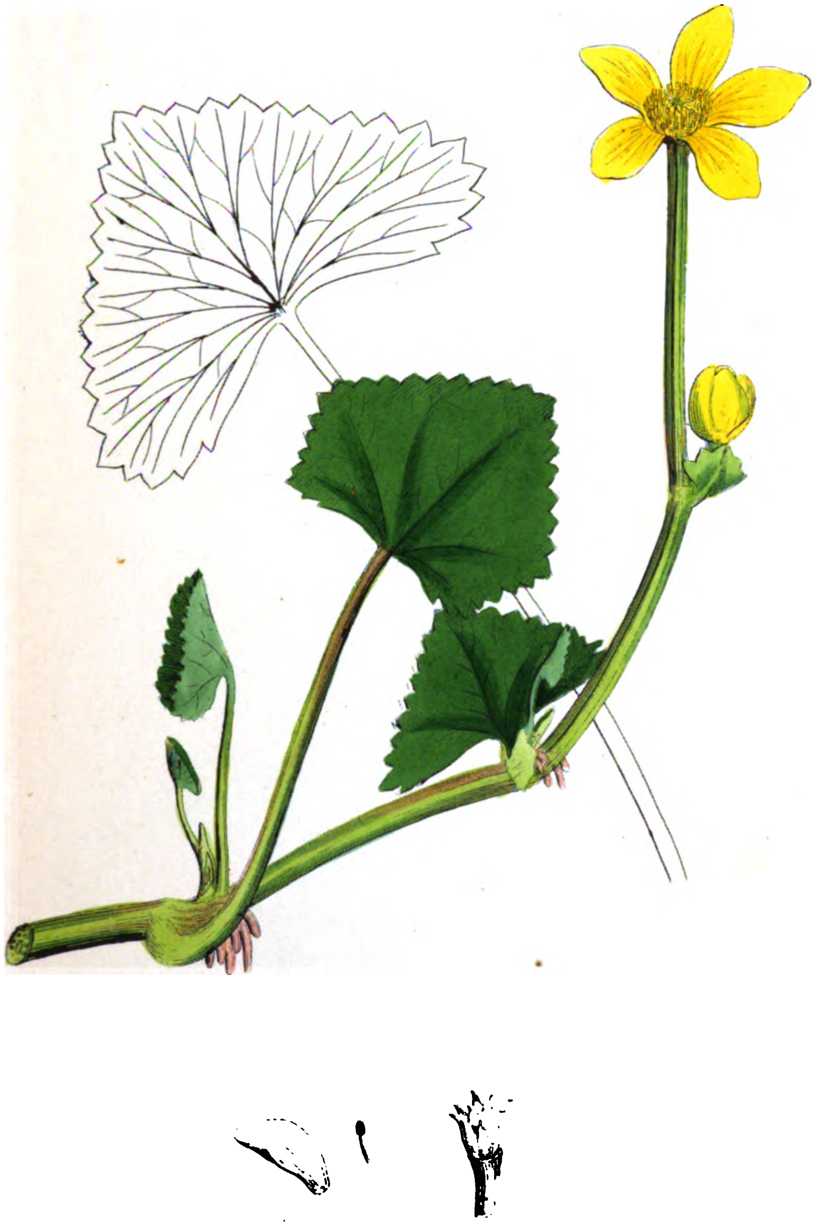
E. B.

Ranunculus eu-Ficaria. Lesser Celandine.



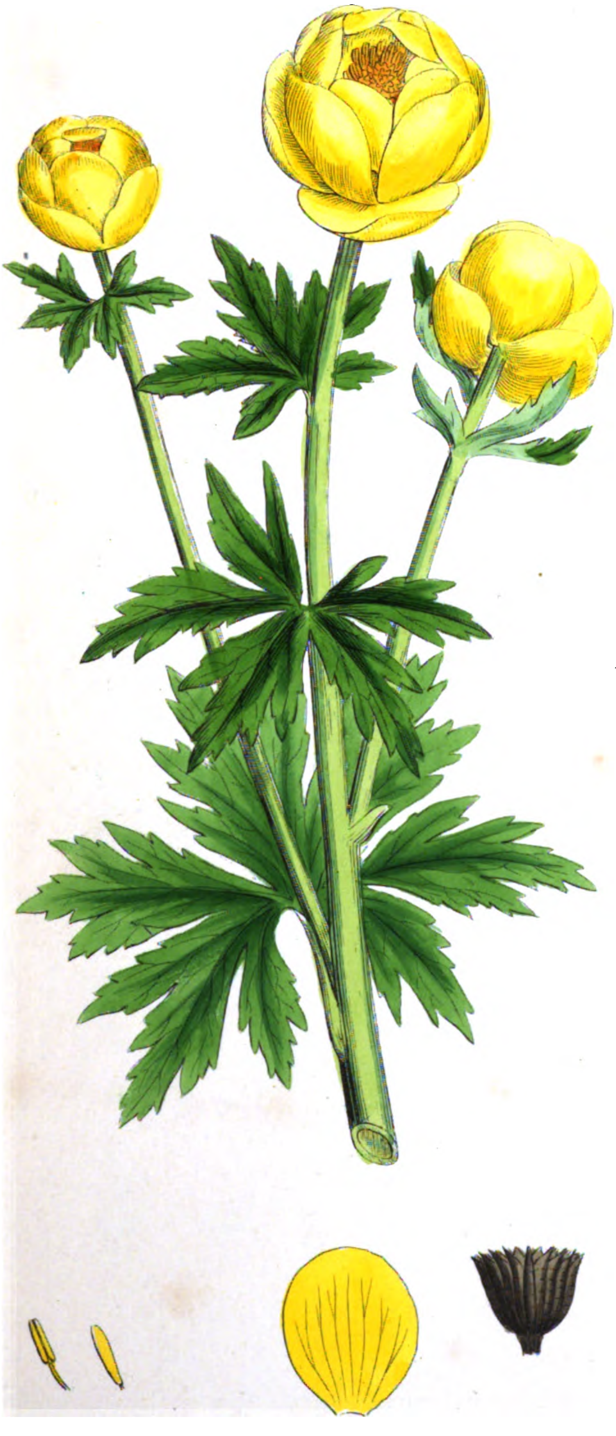
26.

Caltha eu-palustris. Common Marsh-Marygold.



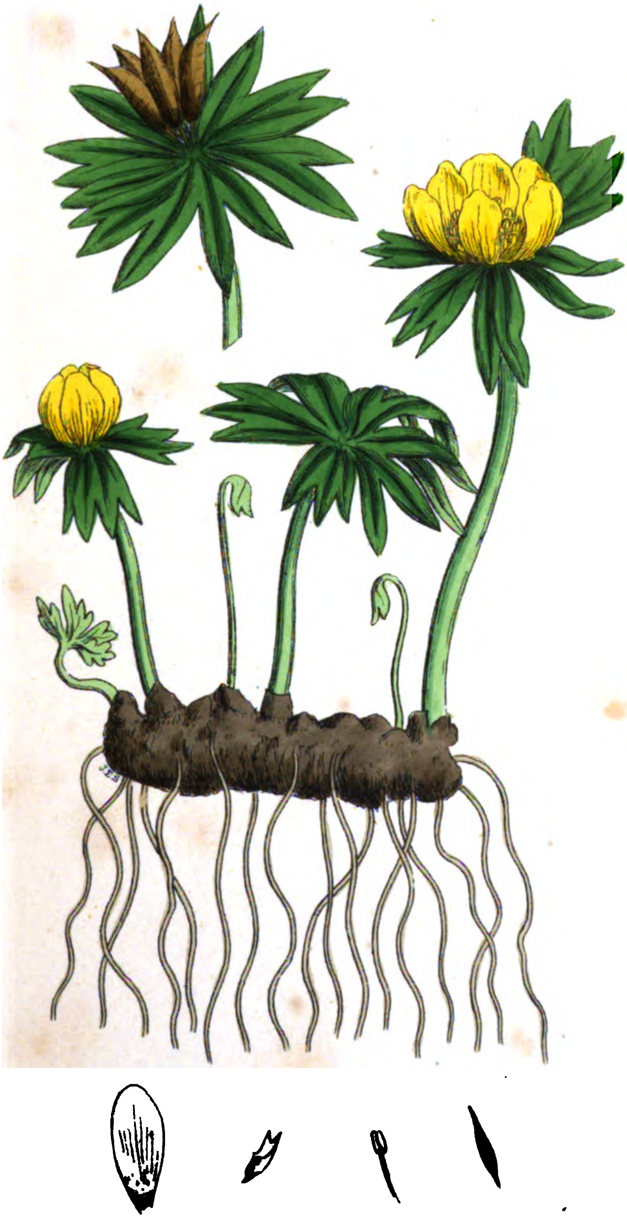
l. 2175.

Caltha radicans. Creeping Marsh-Marygold.



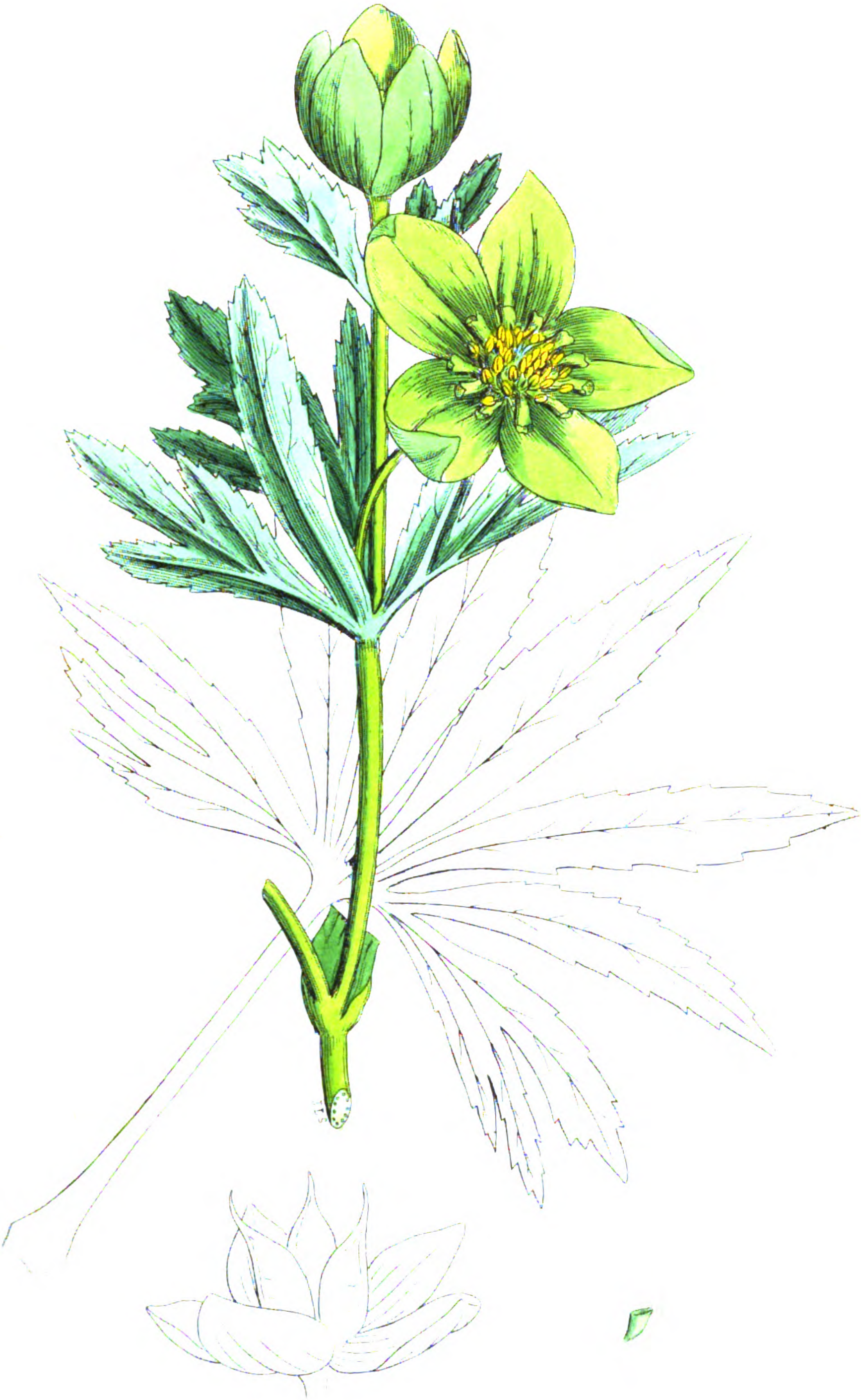
E. B. 28.

Trollius europæus. **Mountain Globe-flower.**

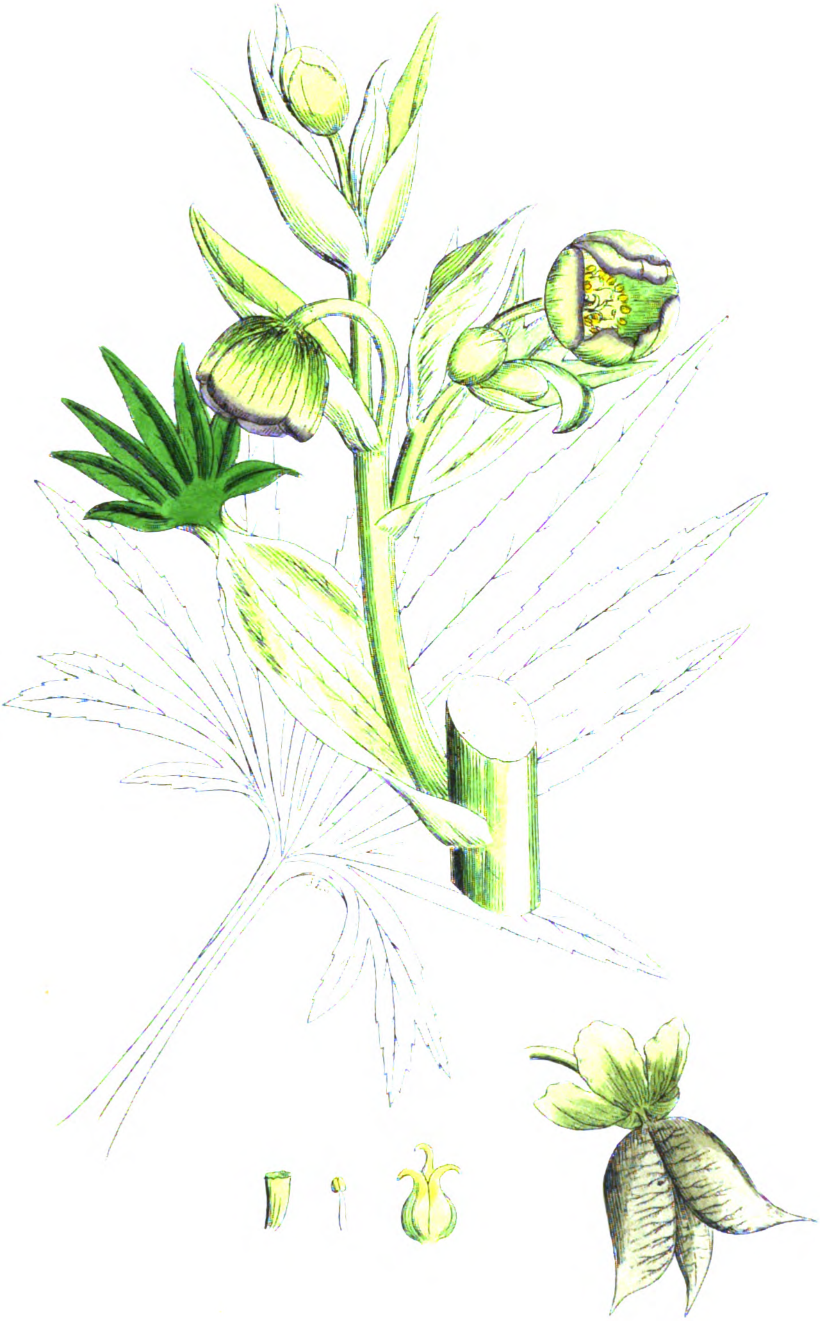


Eranthis hyemalis. Common Winter-aconite.

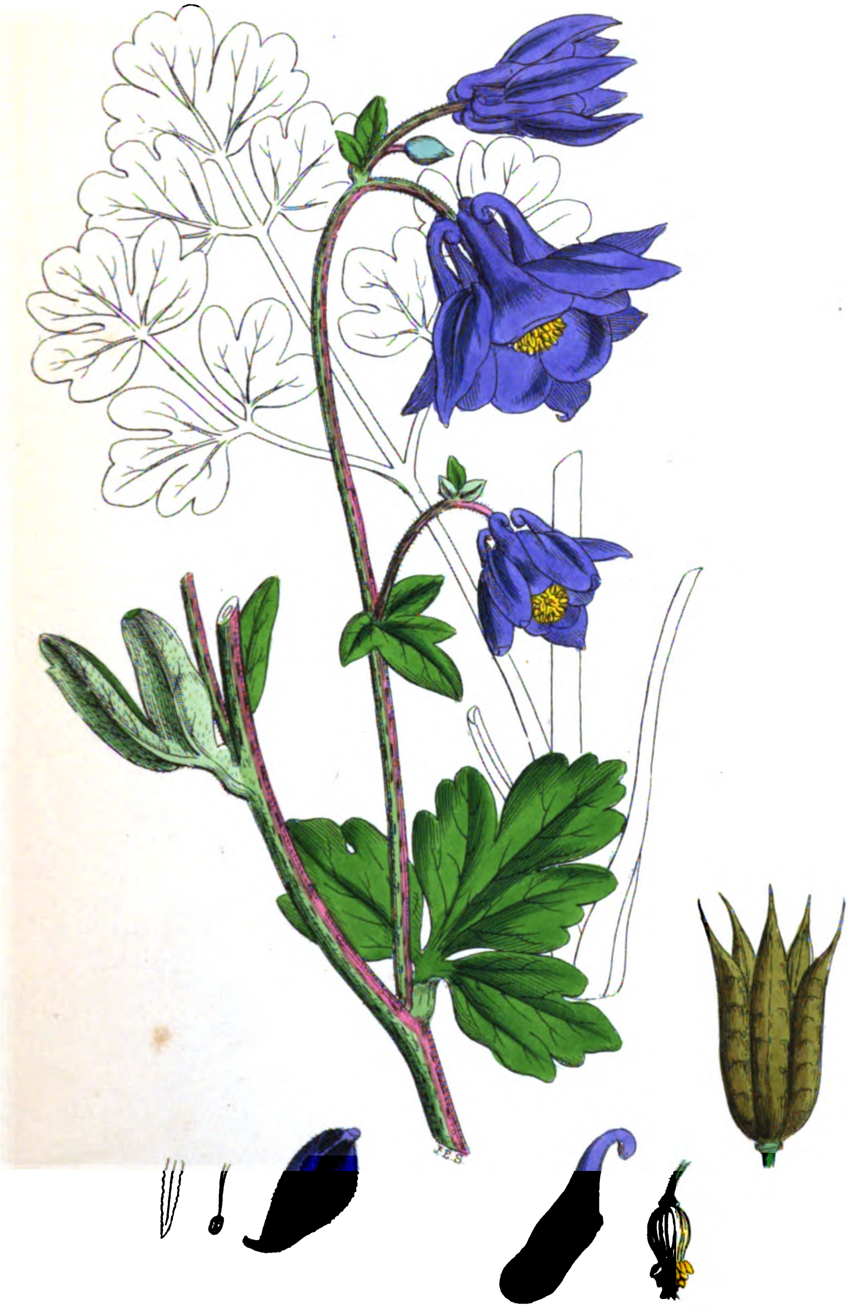
XLIV.



Helleborus viridis. Green Hellebore.

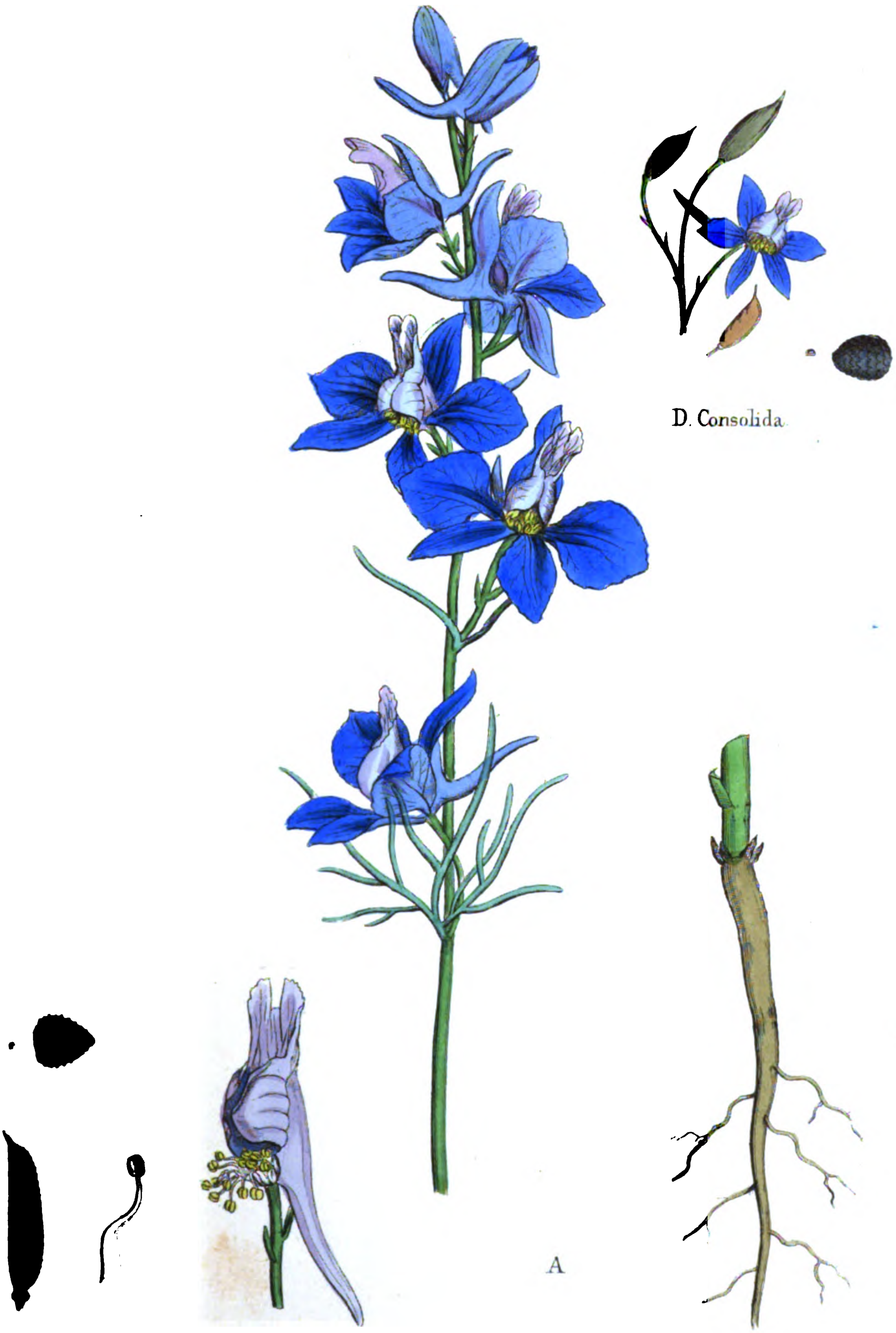


Helleborus foetidus. Stinking Hellebore.

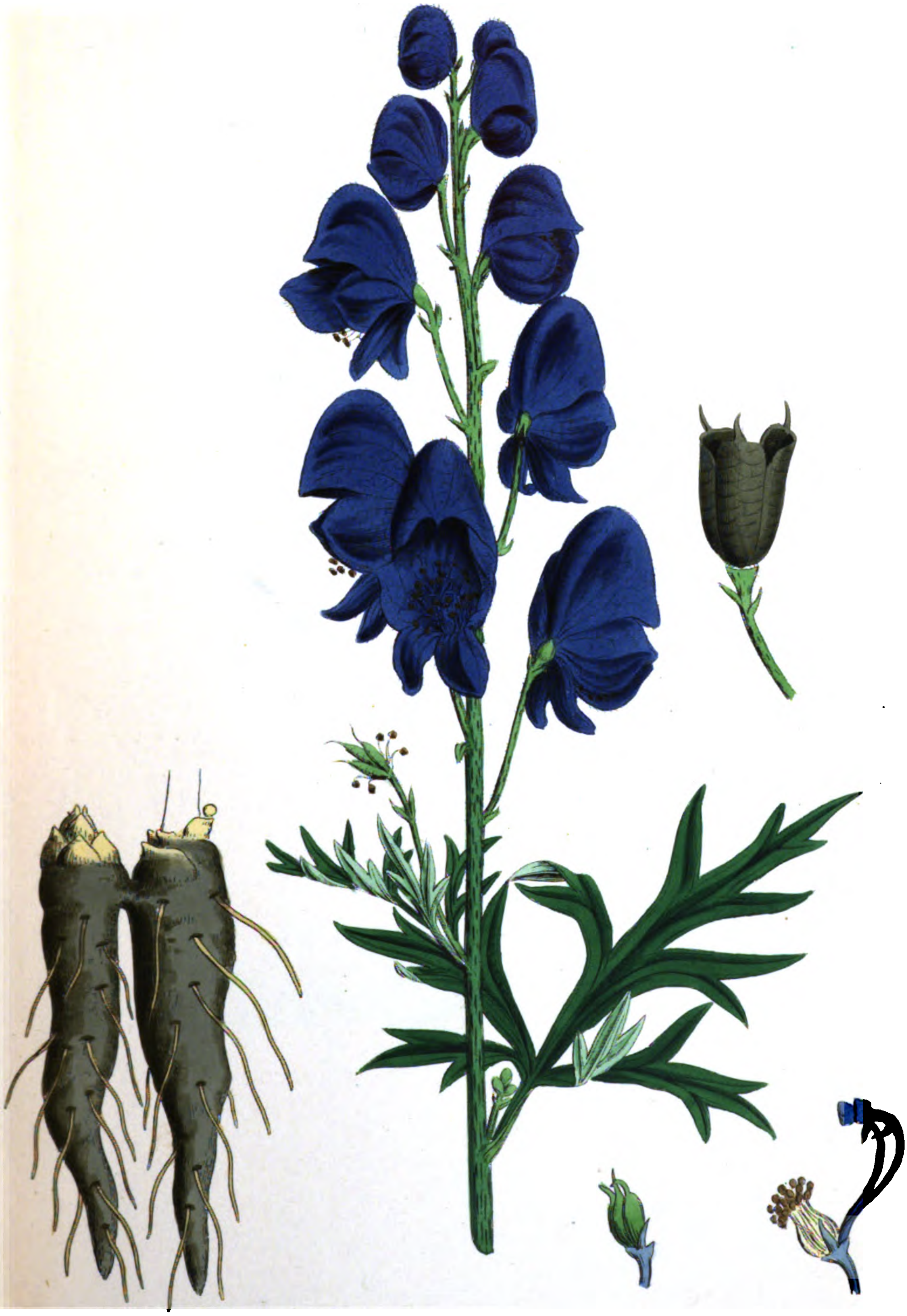


Aquilegia vulgaris. Common Columbine.

XLVII.

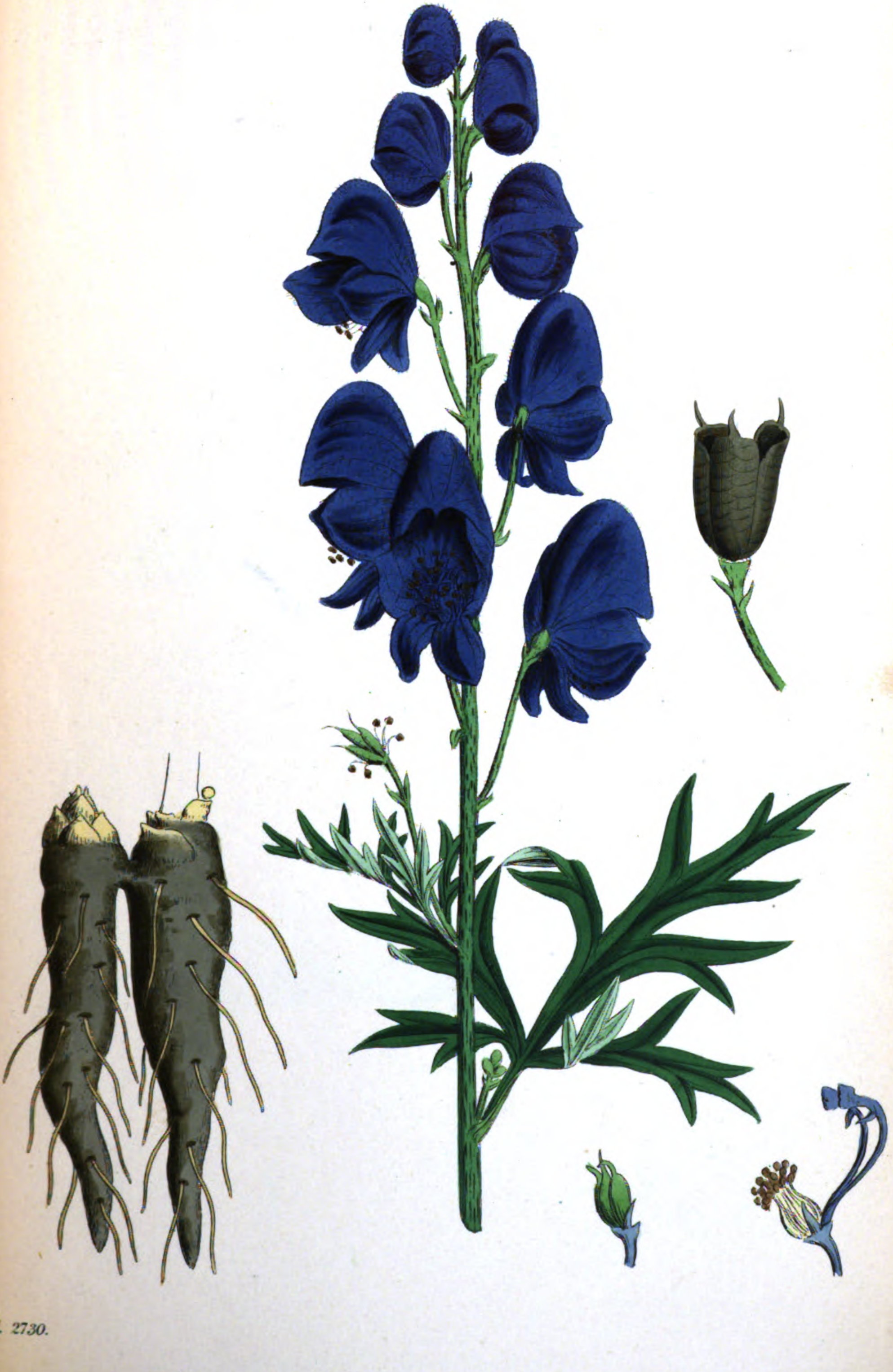


Delphinium Ajacis. **Branching Larkspur.**



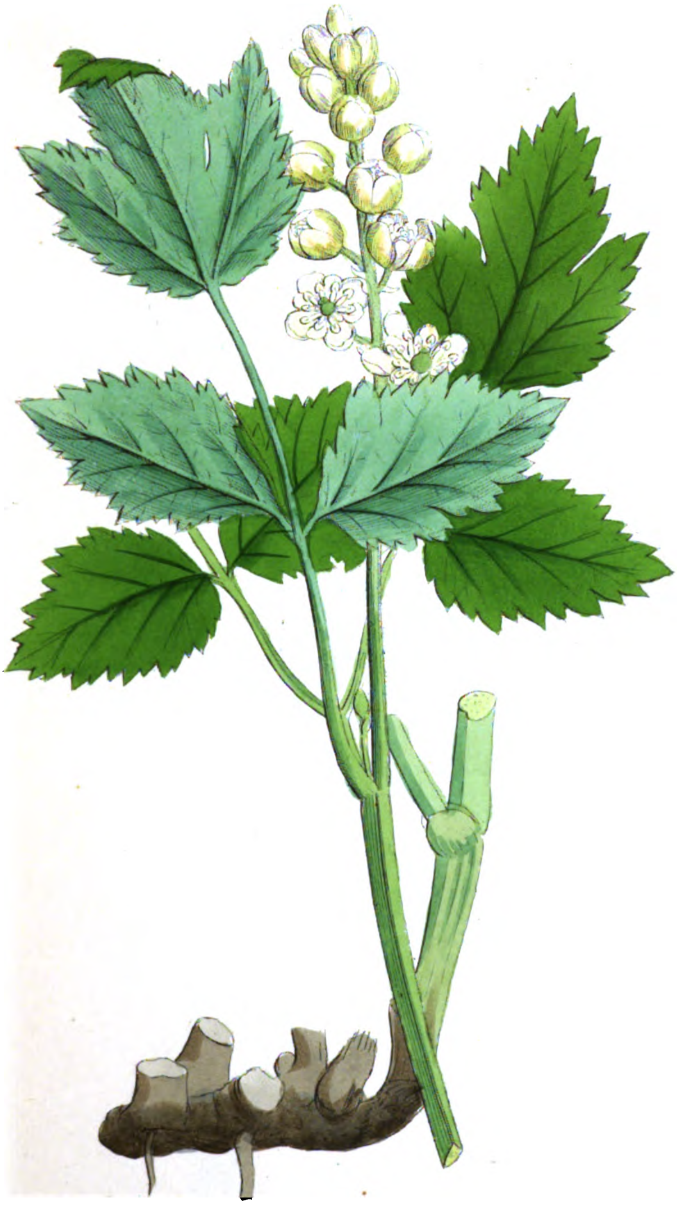
. B. S. 2730.

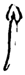
Aconitum Napellus.   Common Monkshood.



E.B.S. 2730.

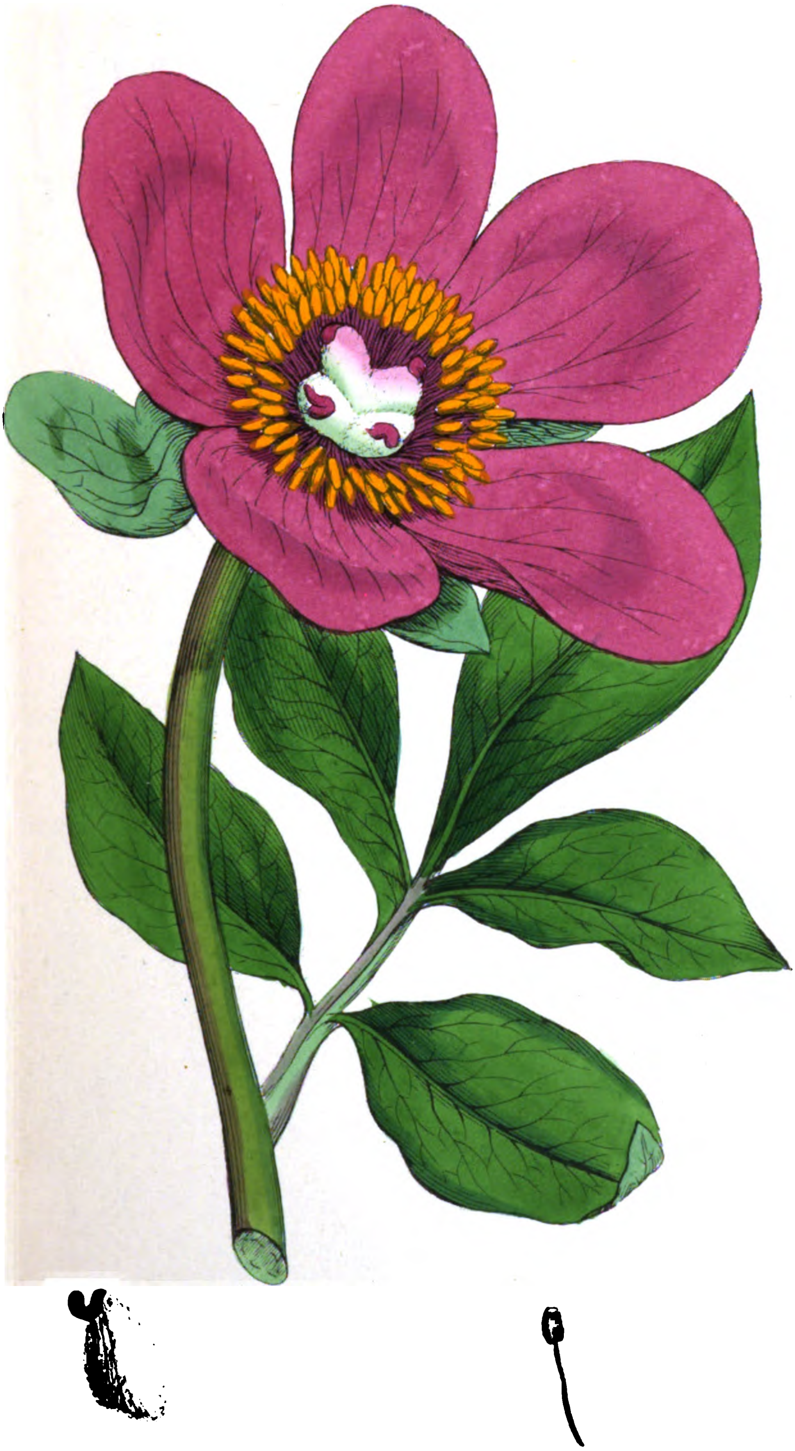
Aconitum Napellus. Common Monkshood.





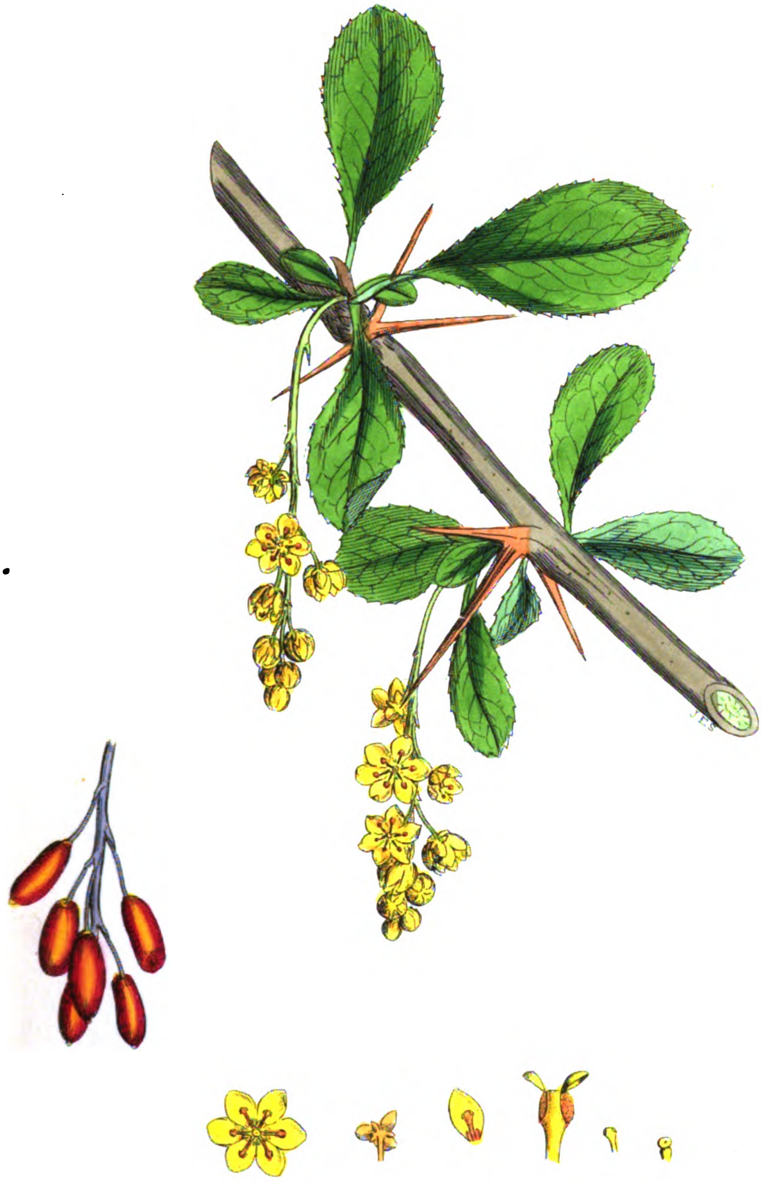
Actæa spicata. Herb Christopher.

L.



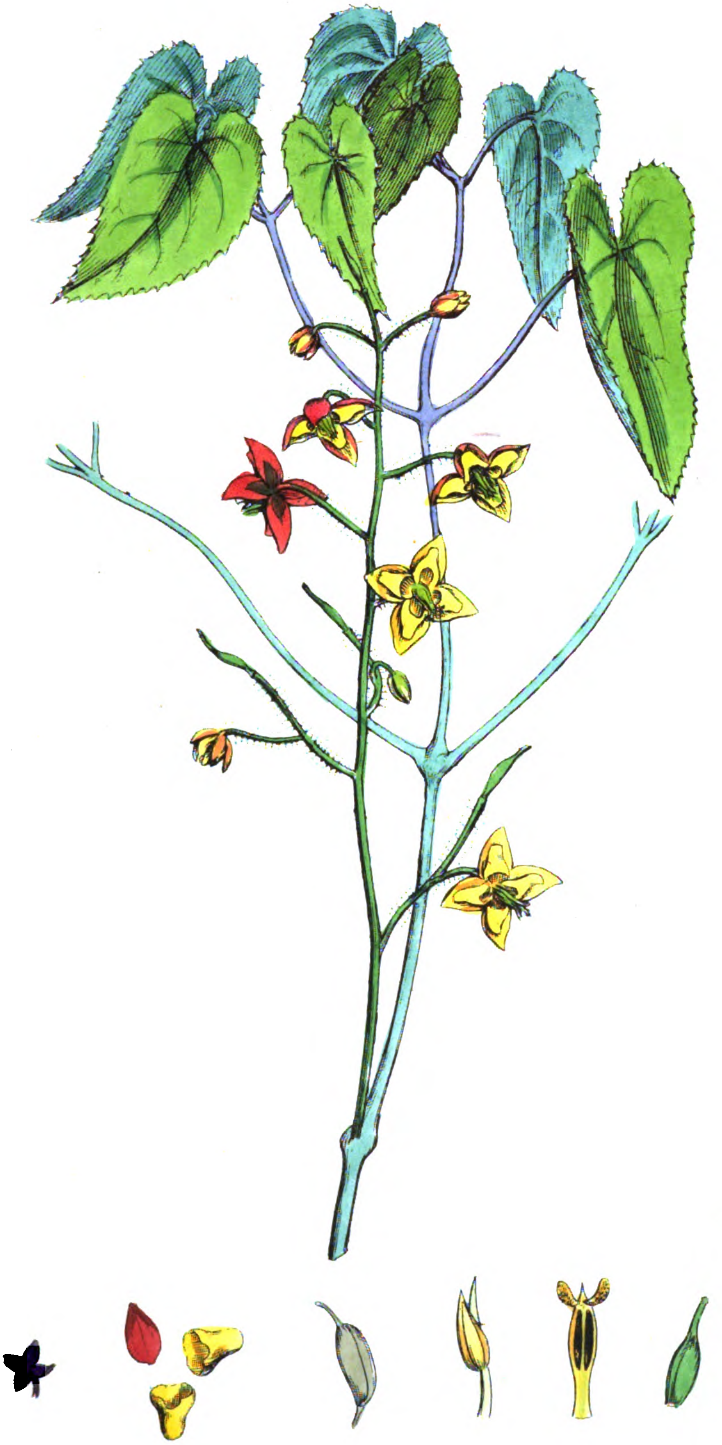
E. B. 1513.

Pæonia corallina. Entire-leaved Pæony.



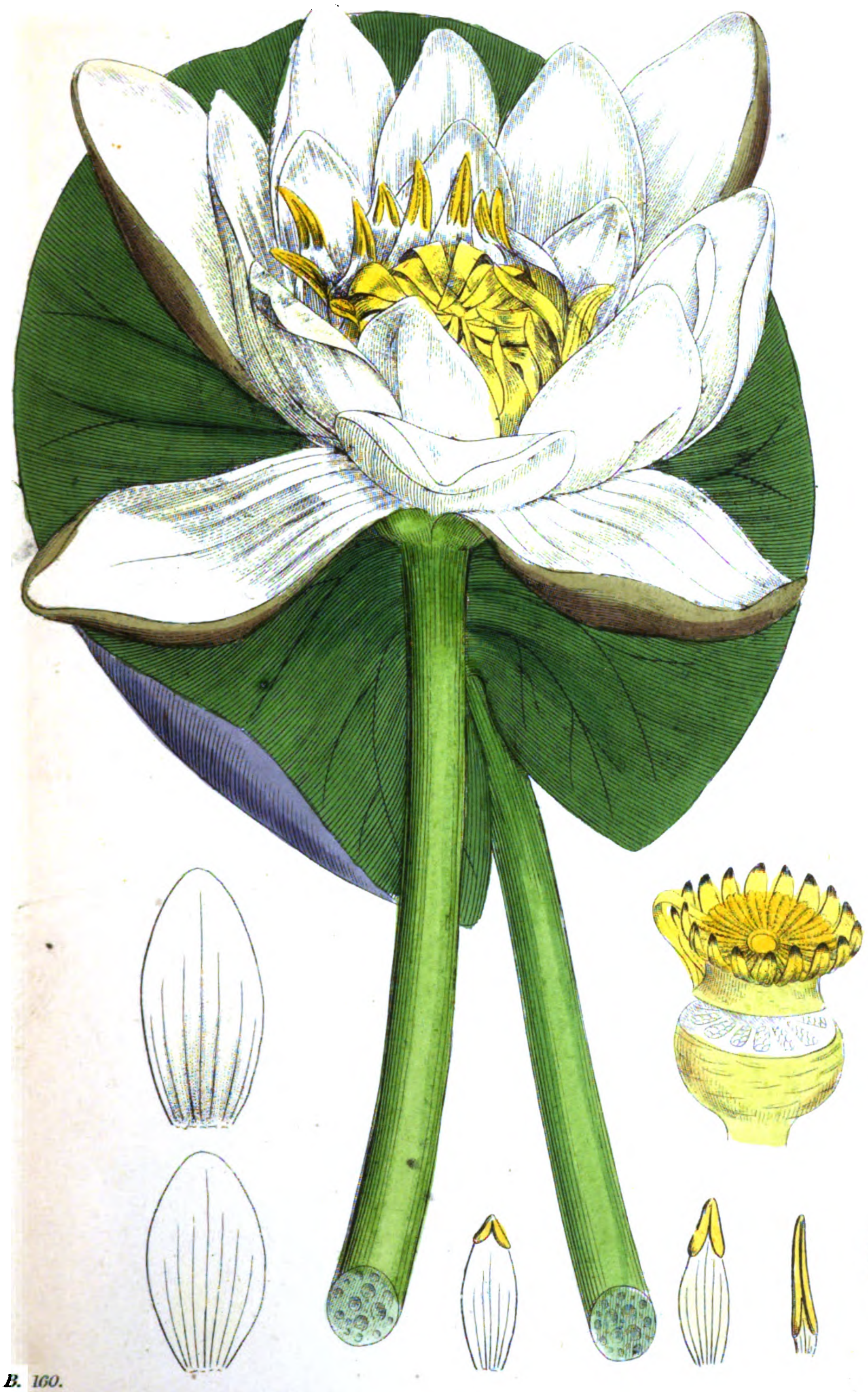
E. B. 49.

Berberis vulgaris. Common Barberry.



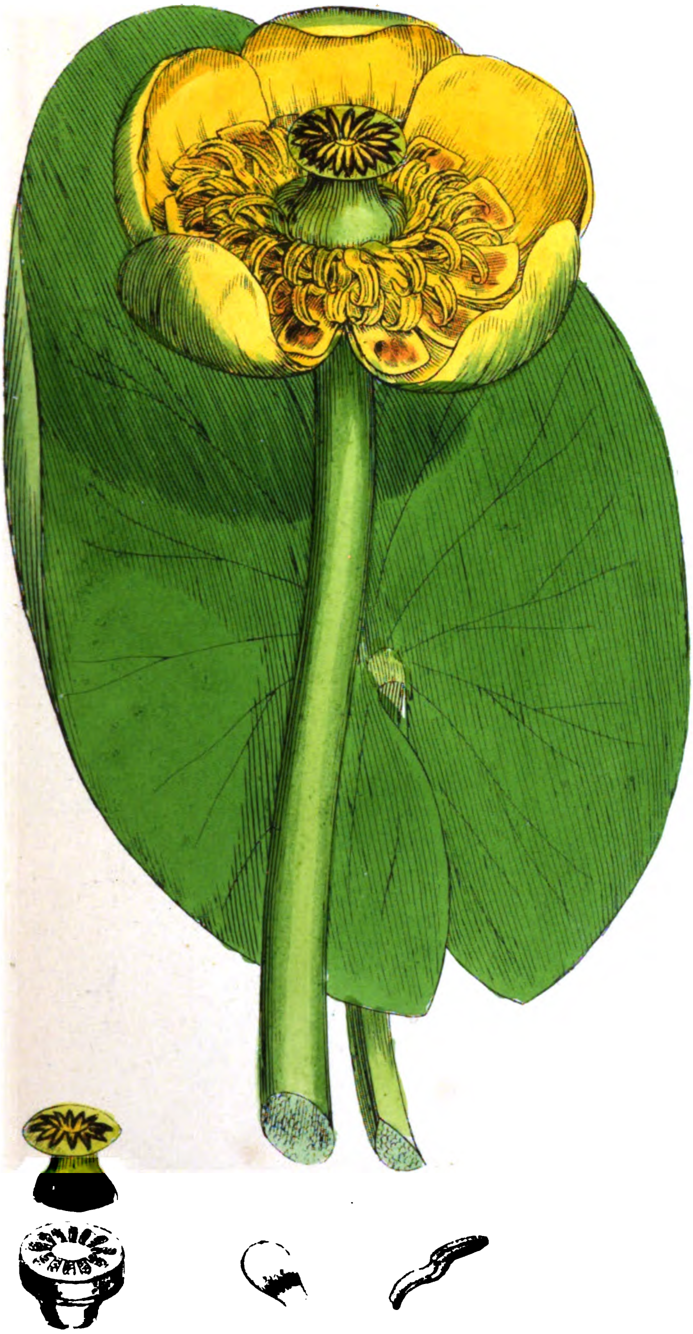
E. B. 438.

Epimedium alpinum. Alpine Barren wort.



E. B. 160.

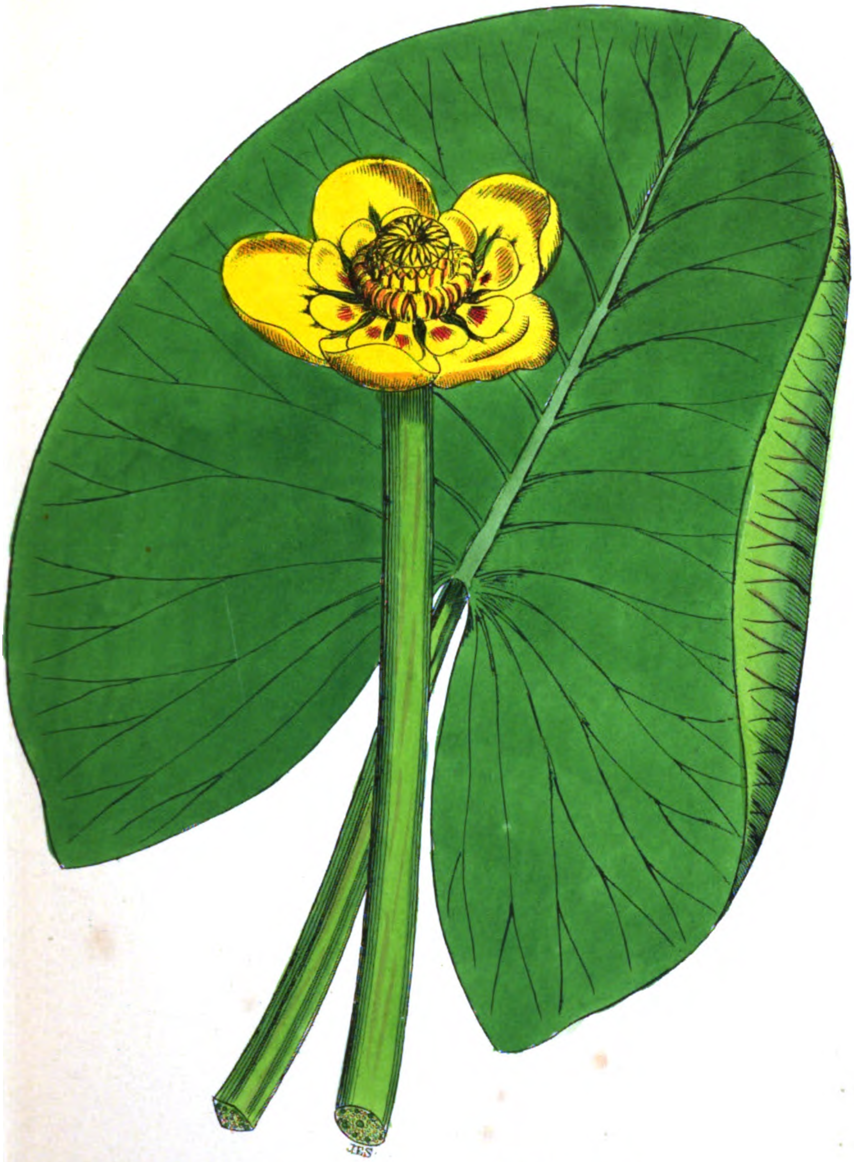
Nymphæa alba. White Water-Lily.

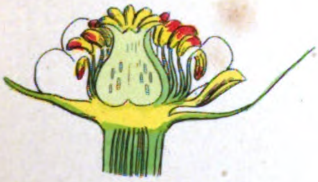


E.B. 159.

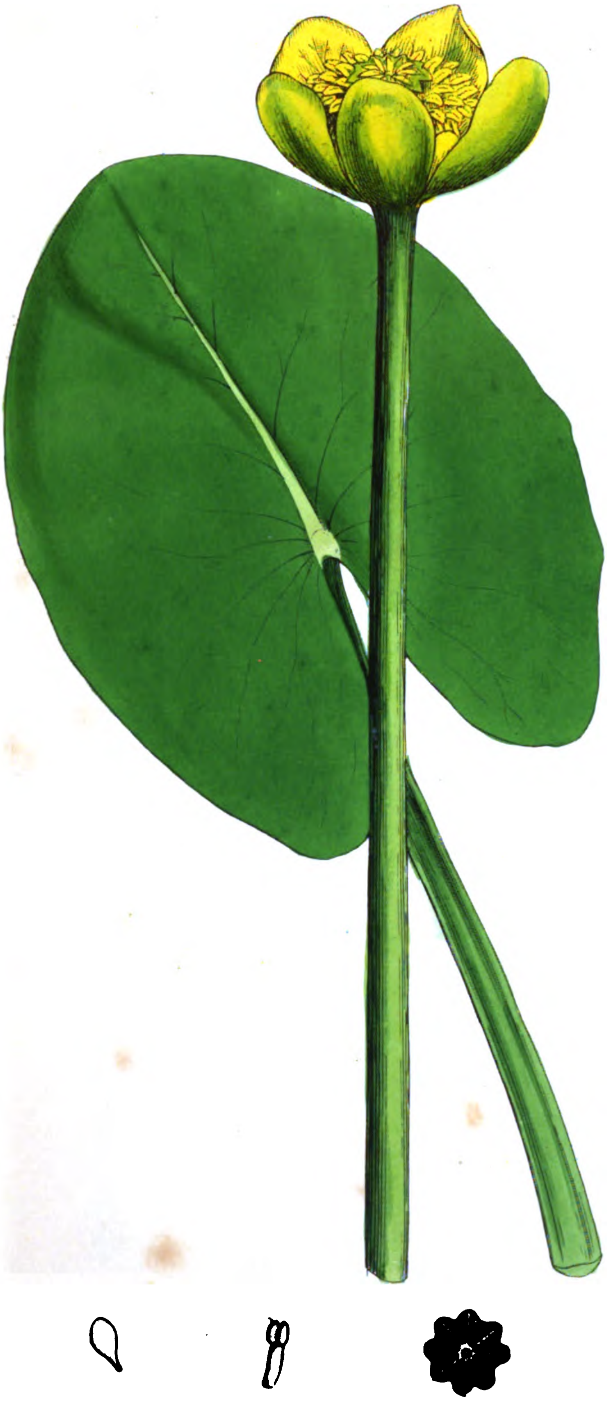
Nuphar lutea, var. major. Common Yellow Water-Lily. *var. α*

LV.



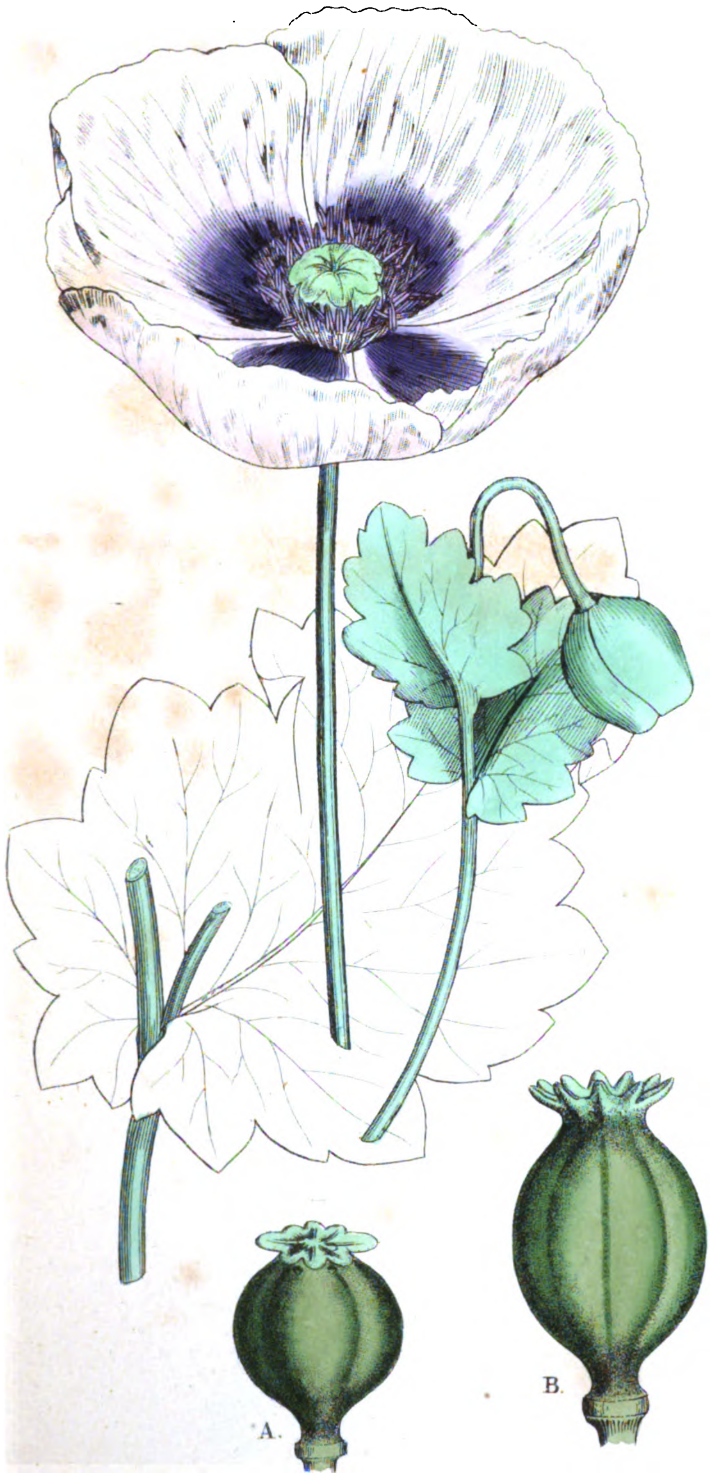


Nuphar lutea, var. minor. Common Yellow Water-Lily. *var. β*



E. B. 2292.

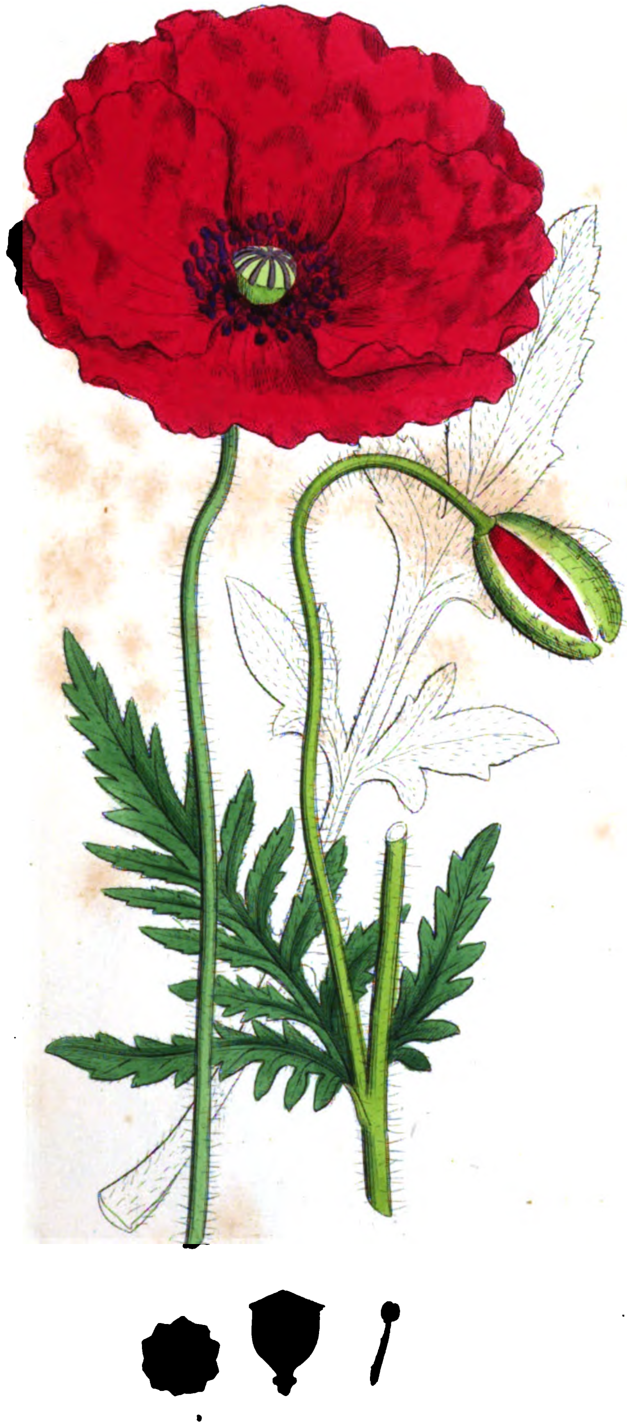
Nuphar pumila. Least Water Lily.



E. B. 2145.

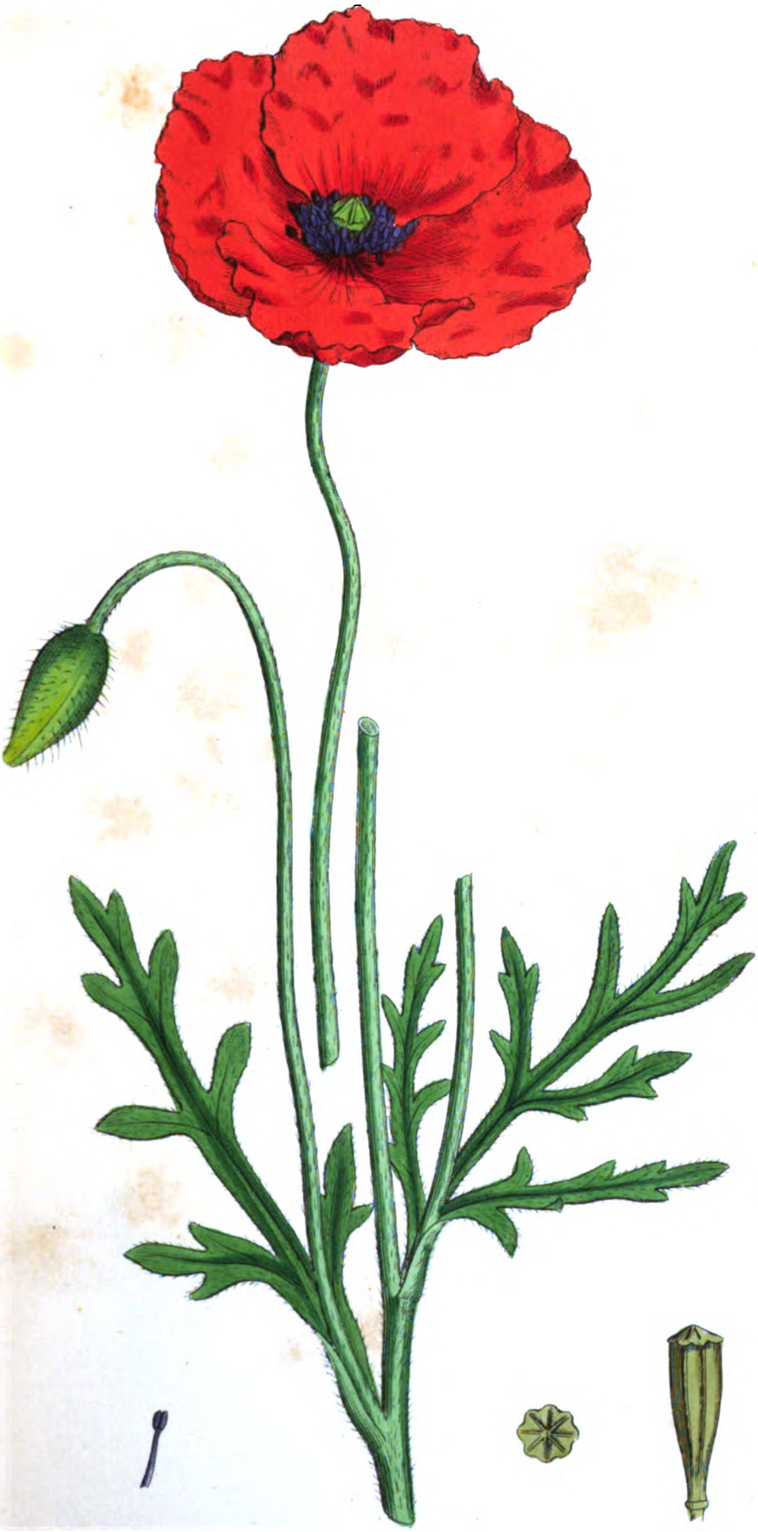
Papaver hortense. Common Garden Poppy.

LVIII.



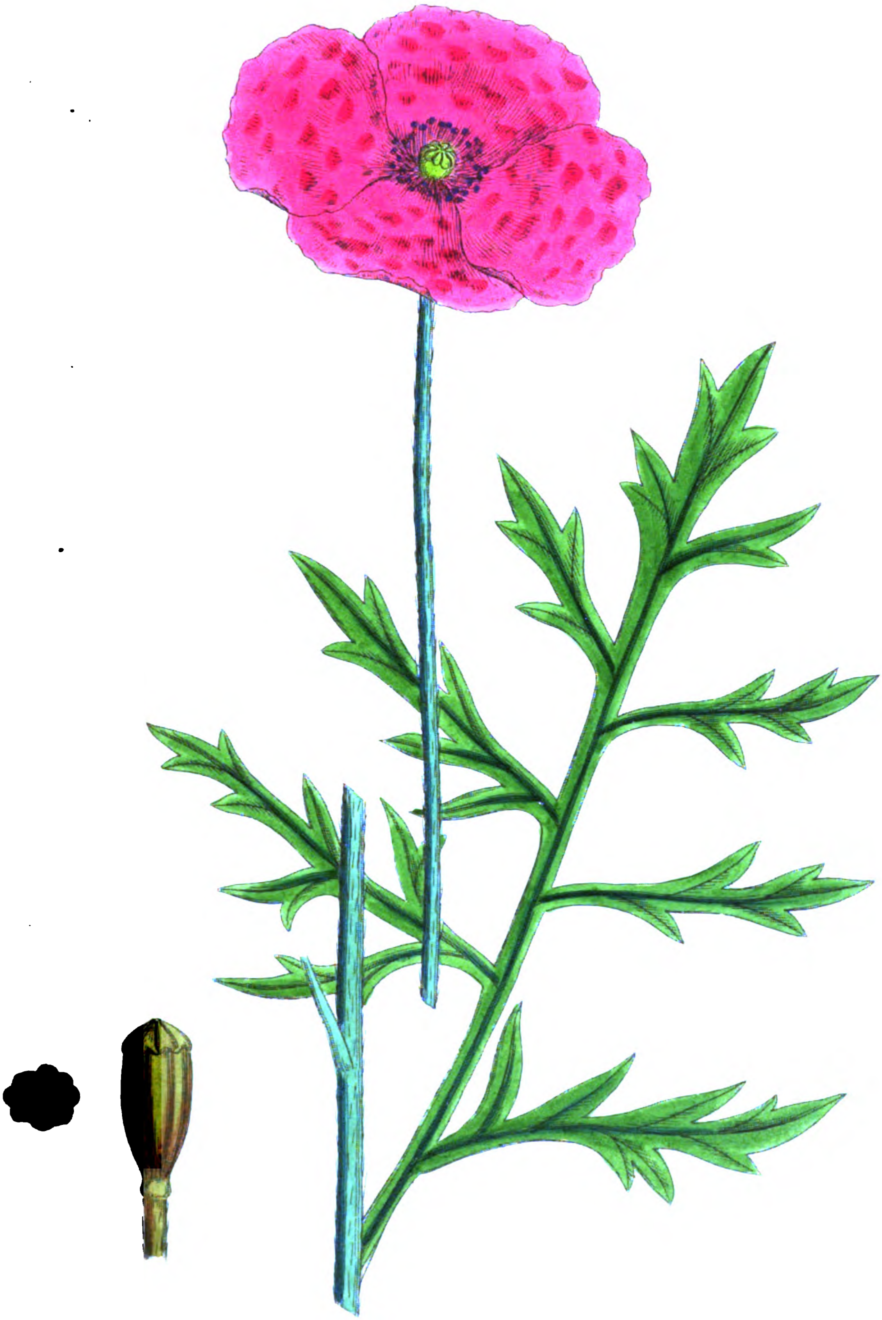
E. B. 645.

Papaver Rhœas. **Common Red Poppy.**

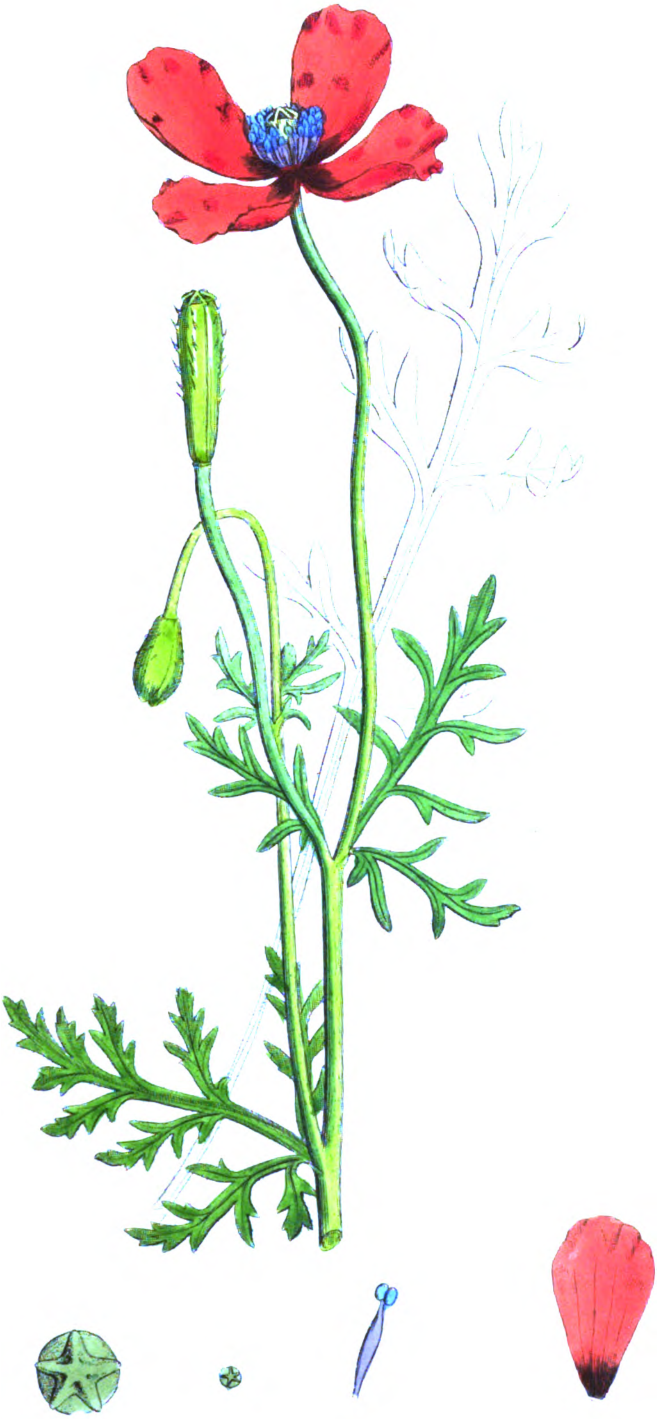


644.

Papaver Lamottei. Lamotte's long-smooth-headed Poppy.

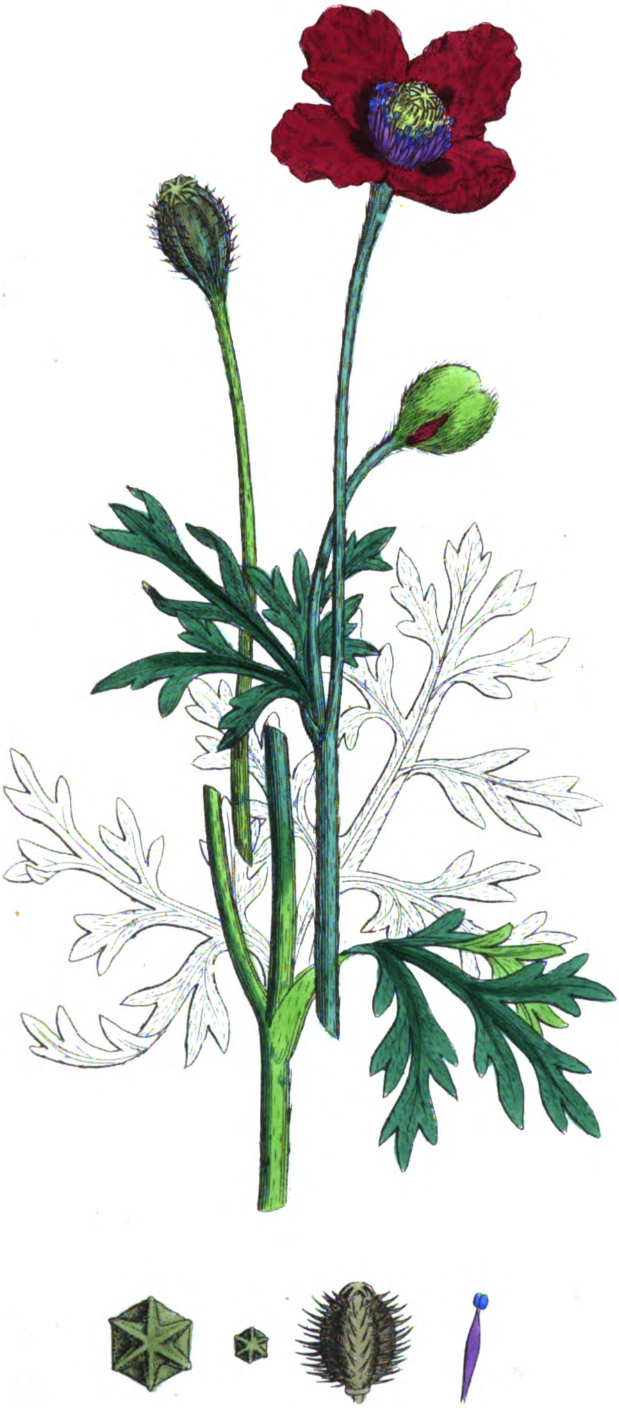


Papaver Lecoqii. Long smooth headed Poppy.



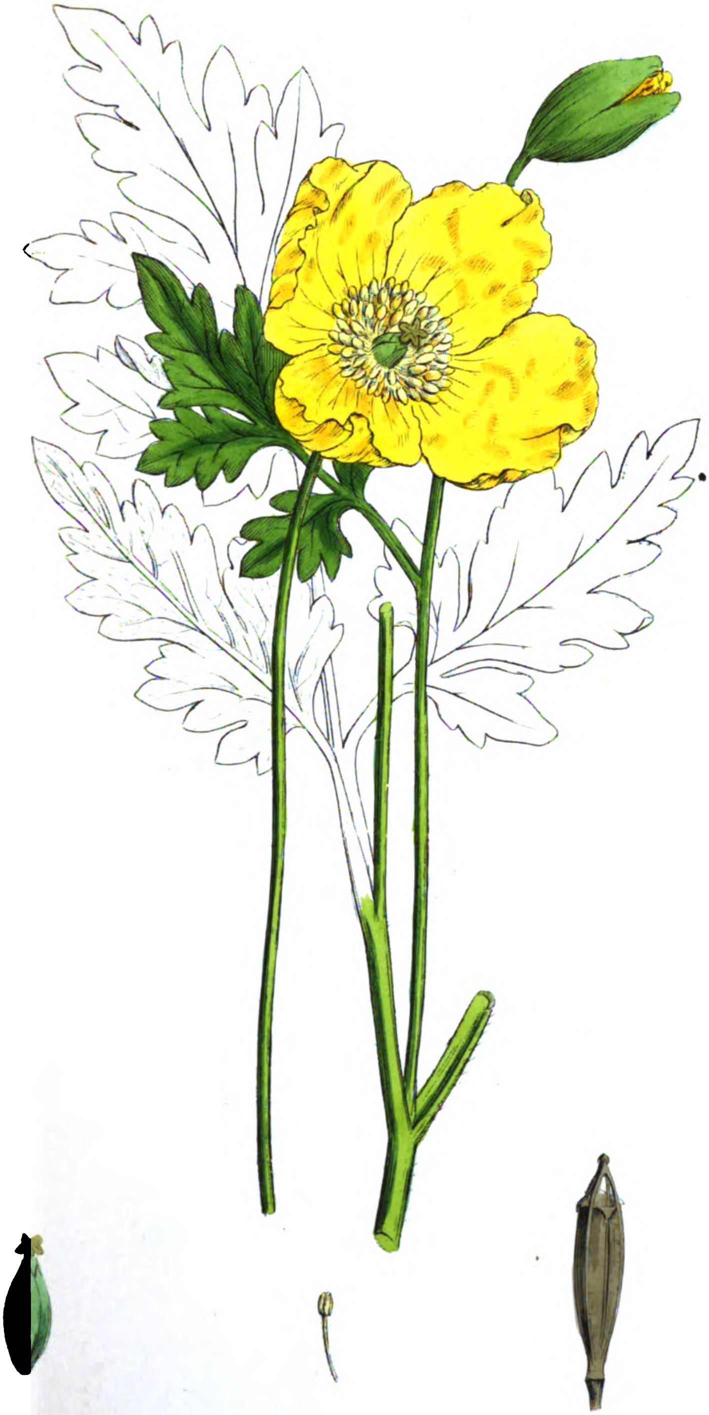
E. B. 643.

Papaver Argemone. Long-prickly-headed Poppy.



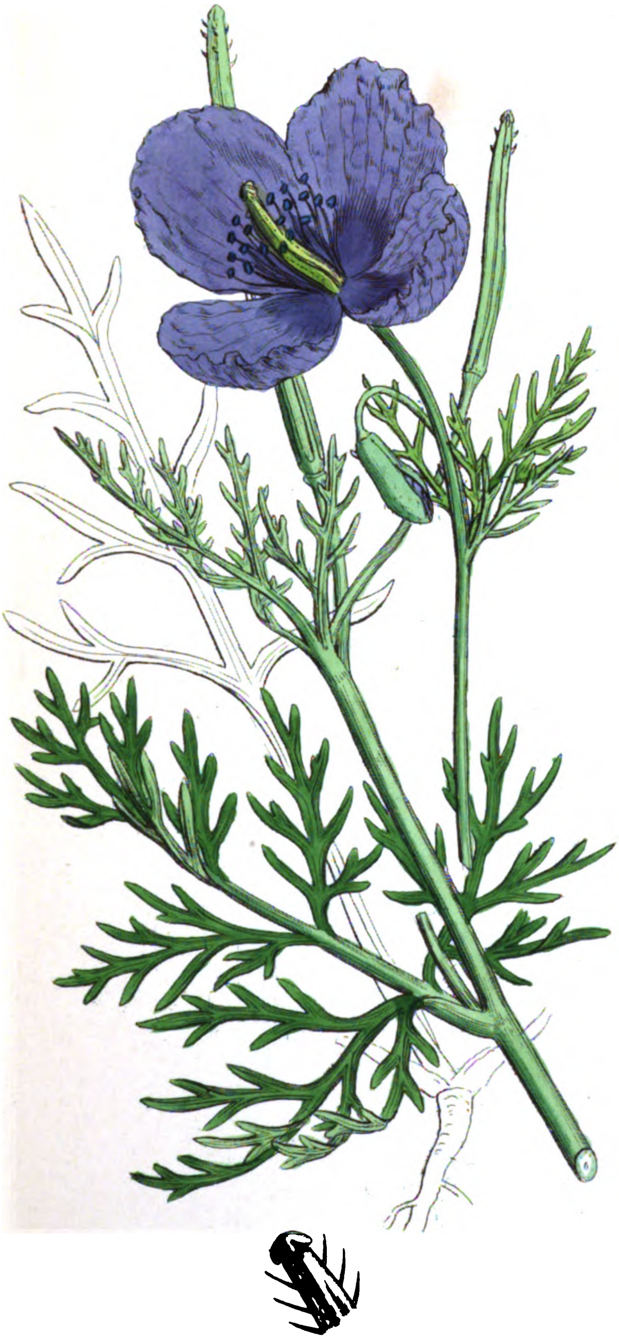
E. B. 43.

Papaver hybridum. Round-prickly-headed Poppy.



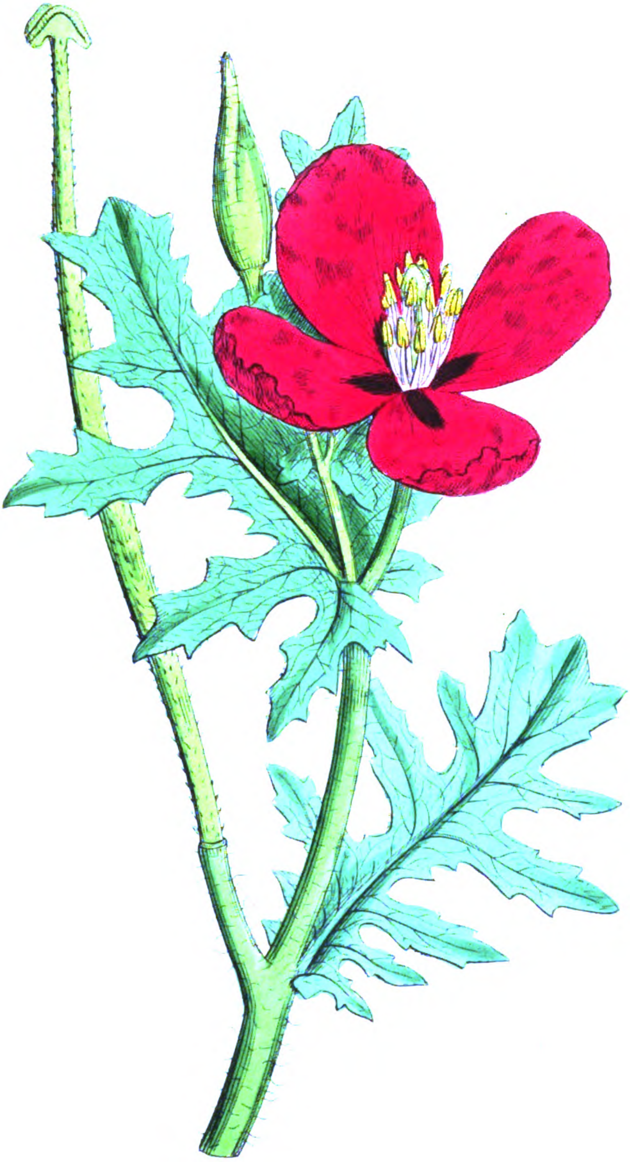
E. B. 66.

Meconopsis cambrica. Yellow Welsh-Poppy.



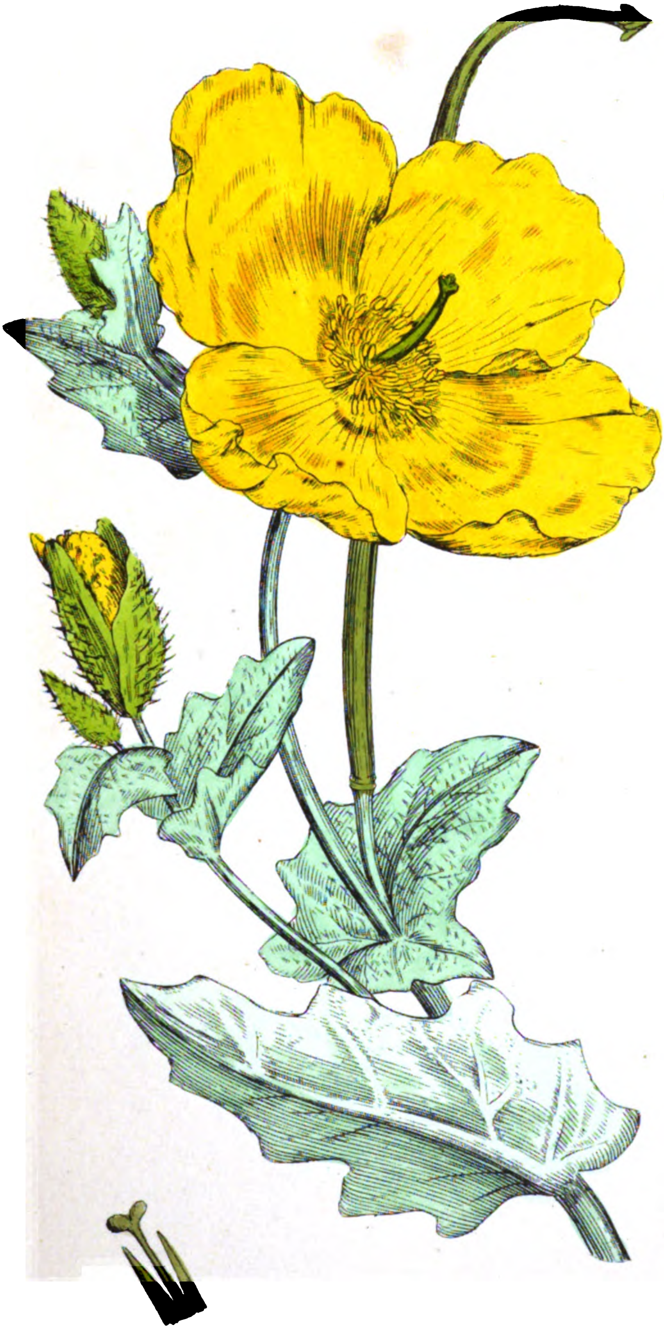
E. B. 201.

Rœmeria hybrida. Violet Horn-Poppy.



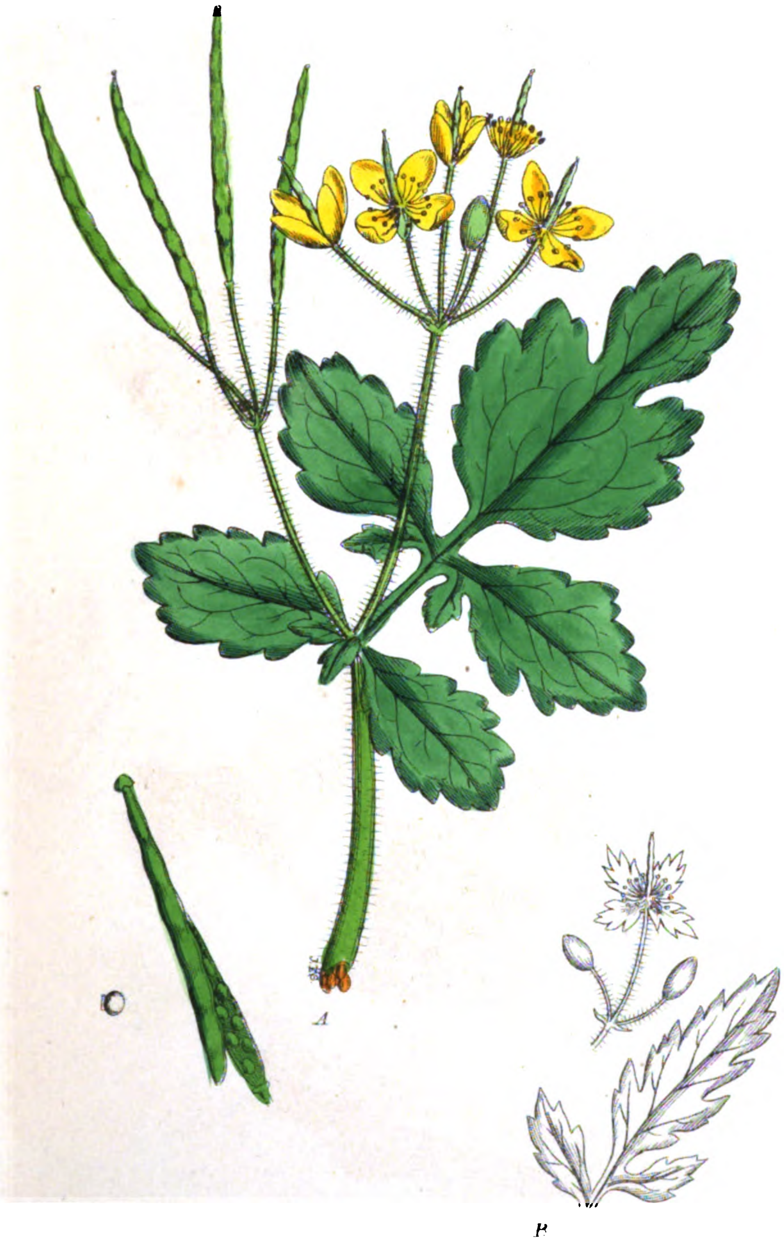
E. B. 1433.

Glaucium corniculatum. Scarlet Horn-Poppy.



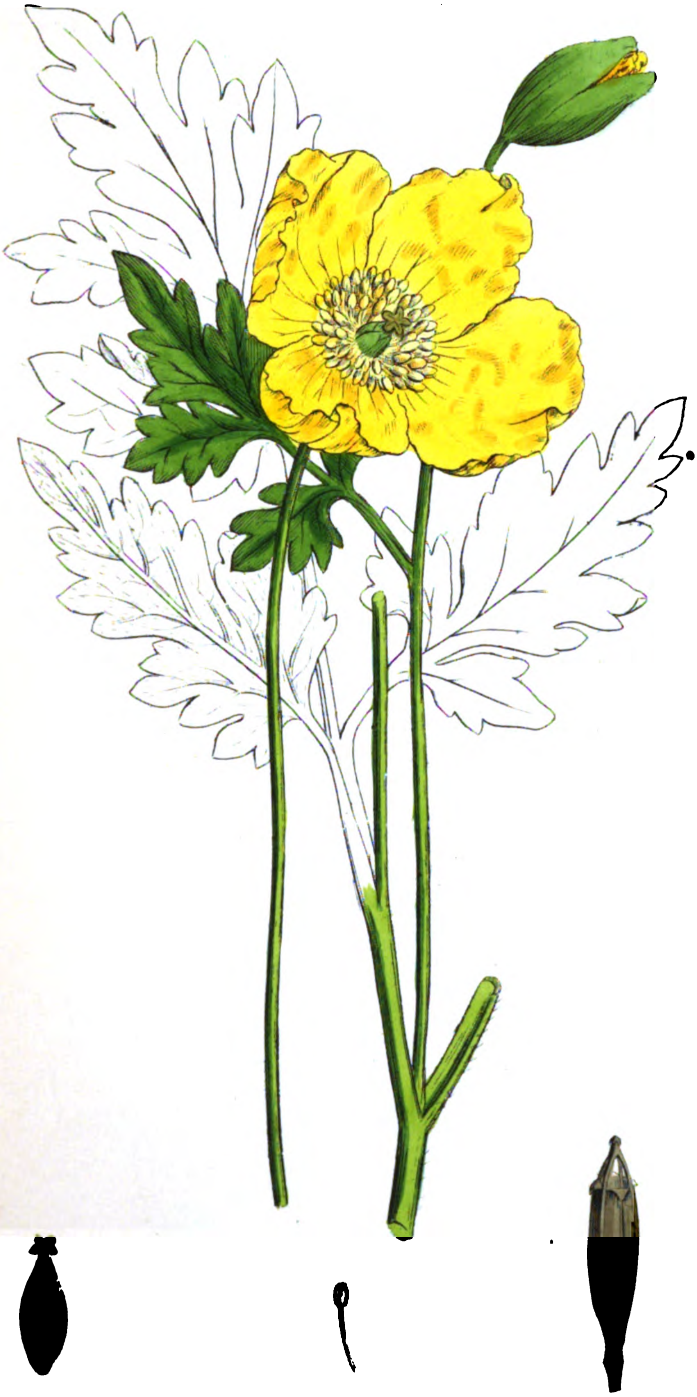
E. B. 8.

Glaucium luteum. Yellow Horn-Poppy.



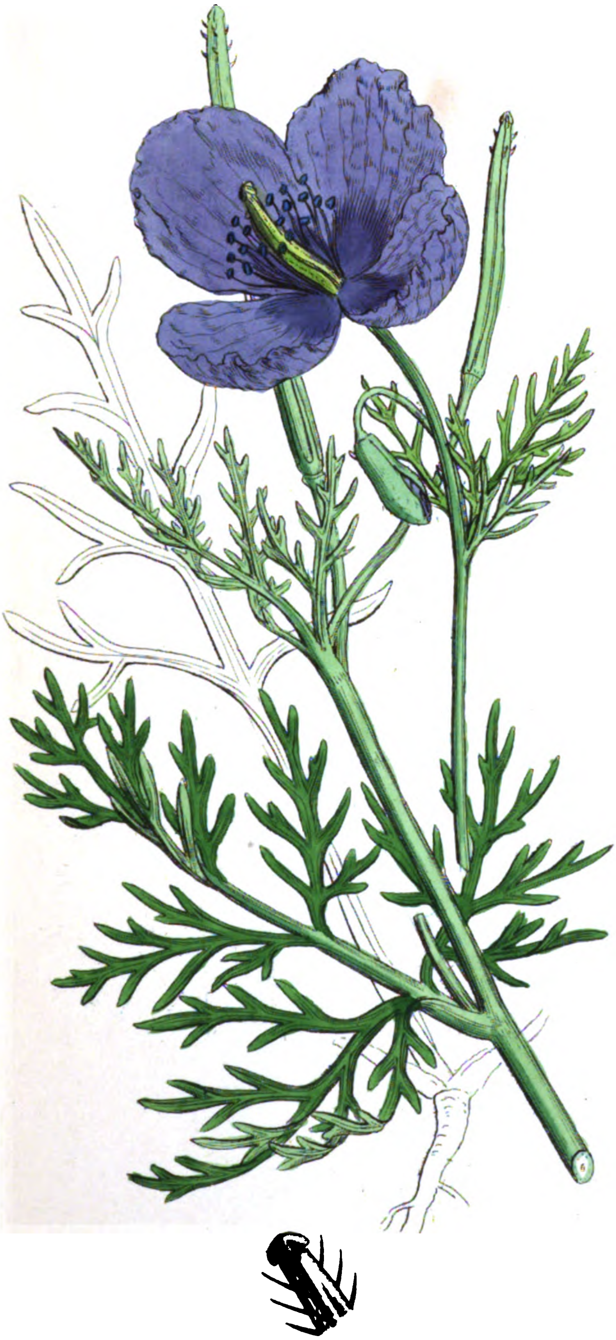
Chelidonium majus. Celandine.

LXIII.



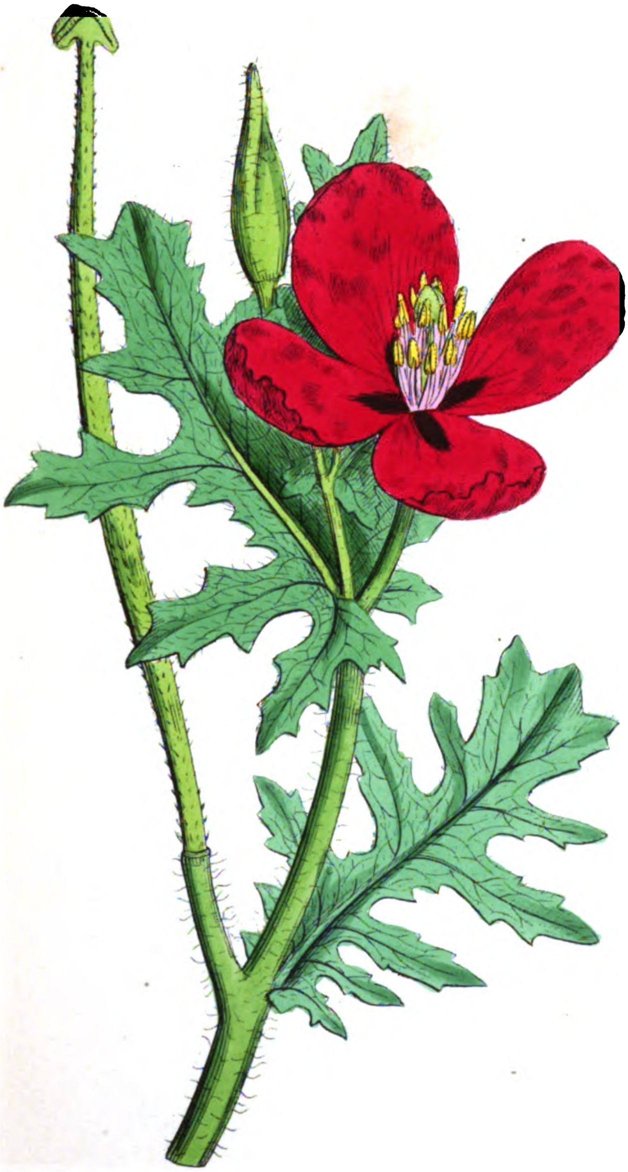
E. B. 66.

Meconopsis cambrica. Yellow Welsh-Poppy.



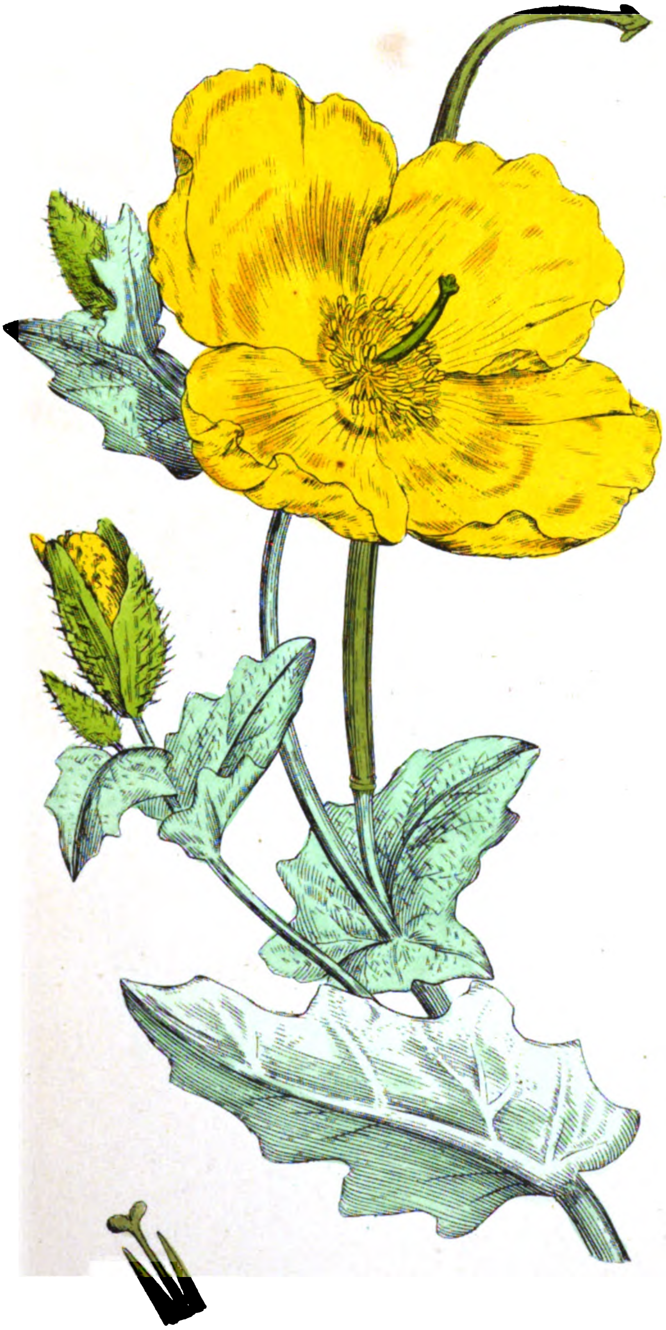
E. B. 201.

Rœmeria hybrida. Violet Horn-Poppy.



E. B. 1433.

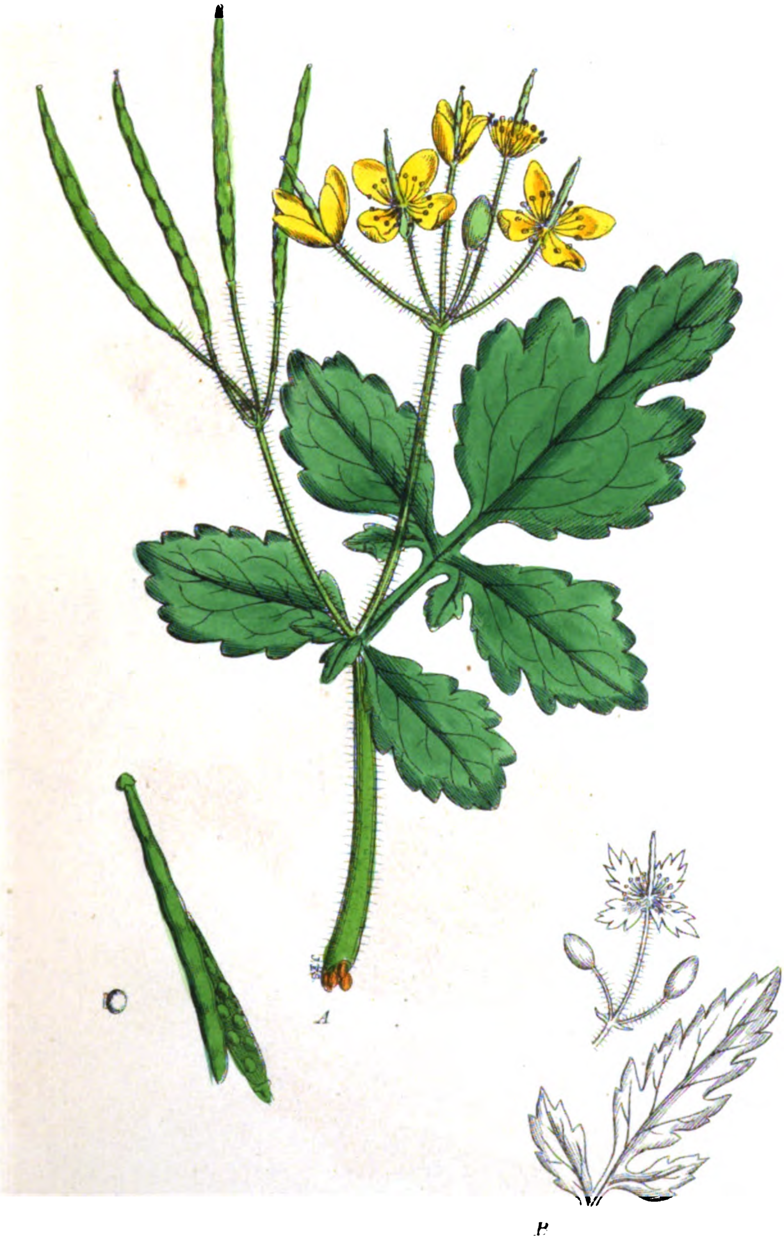
Glaucium corniculatum. Scarlet Horn-Poppy.



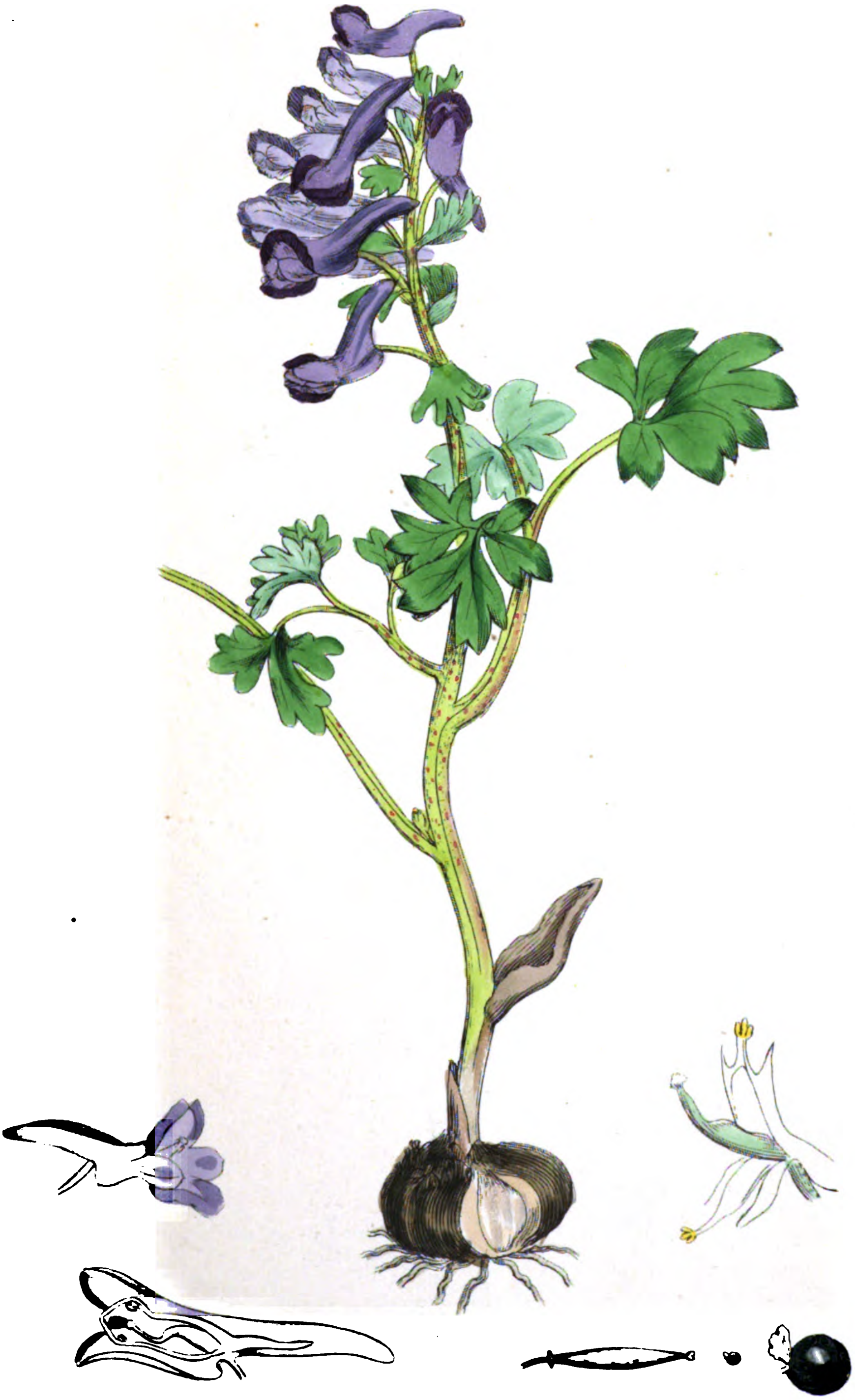
E. B. 8.

Glaucium luteum. Yellow Horn-Poppy.

LXVII.

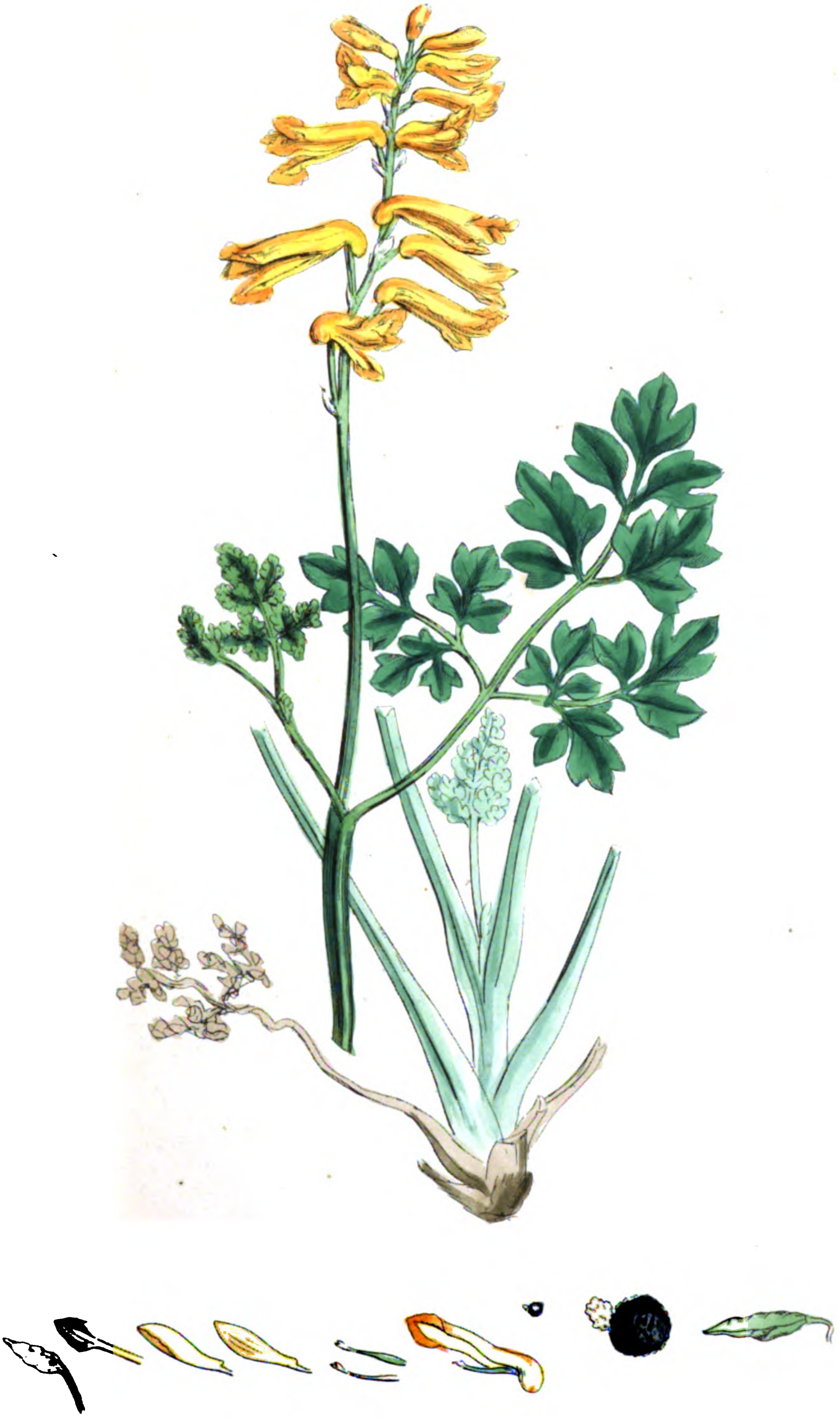


Chelidonium majus. Celandine.



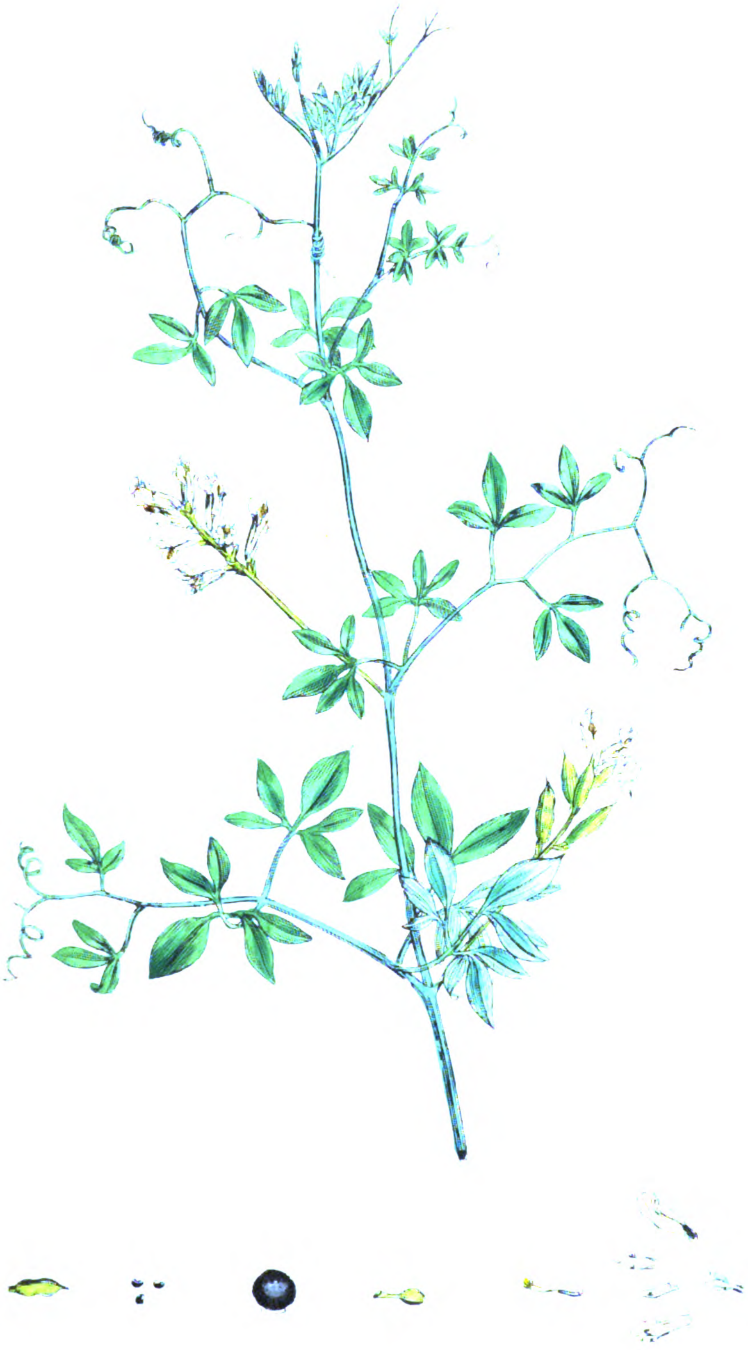
E. B. 1471.

Corydalis solida. Solid Bulbous Fumitory.



E. B. 588.

Corydalis lutea. Yellow Fumitory.

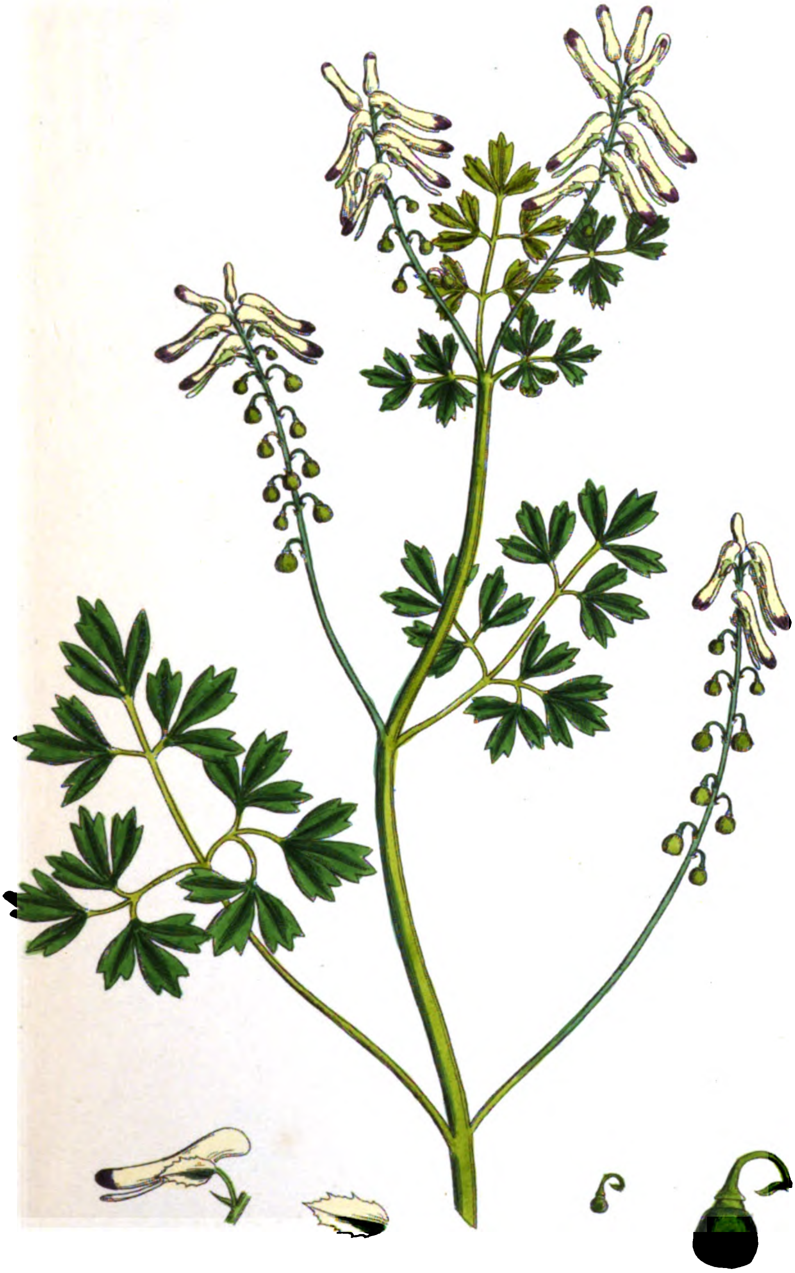


E. B. 103.

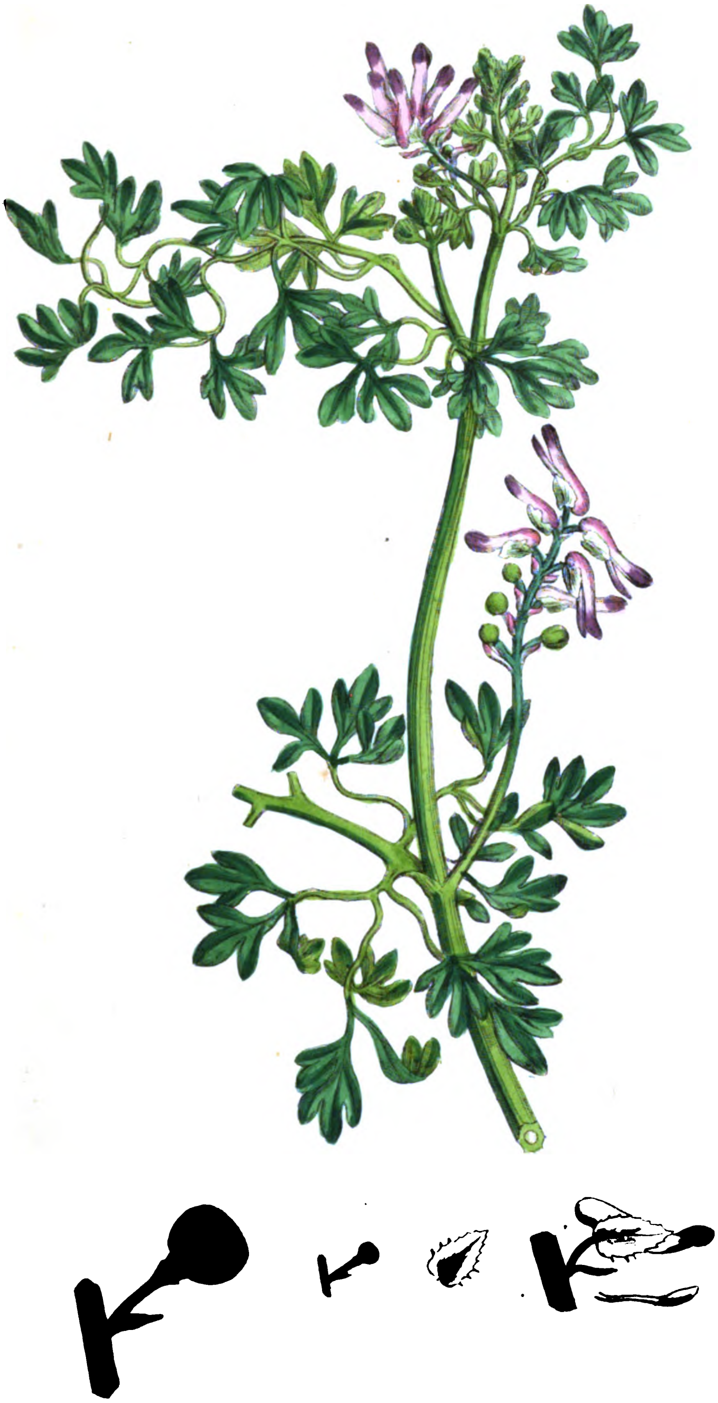
Corydalis claviculata. White climbing Fumitory.

misprint LXXI.

LXXII.



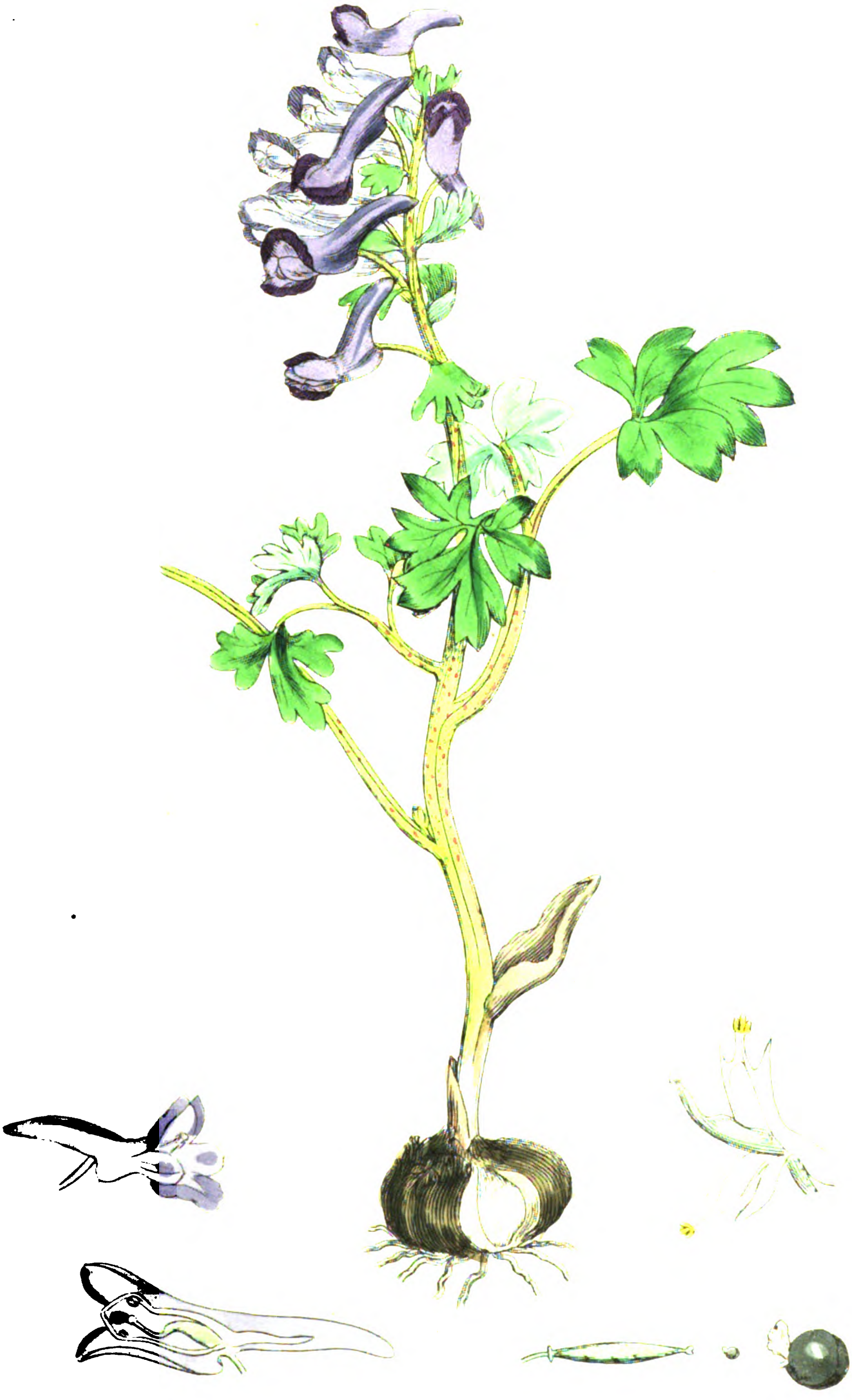
Fumaria Pallidiflora. Pale flowered Fumitory.



E. B. 943.

Fumaria Boræi. Boreau's Rampant Fumitory.

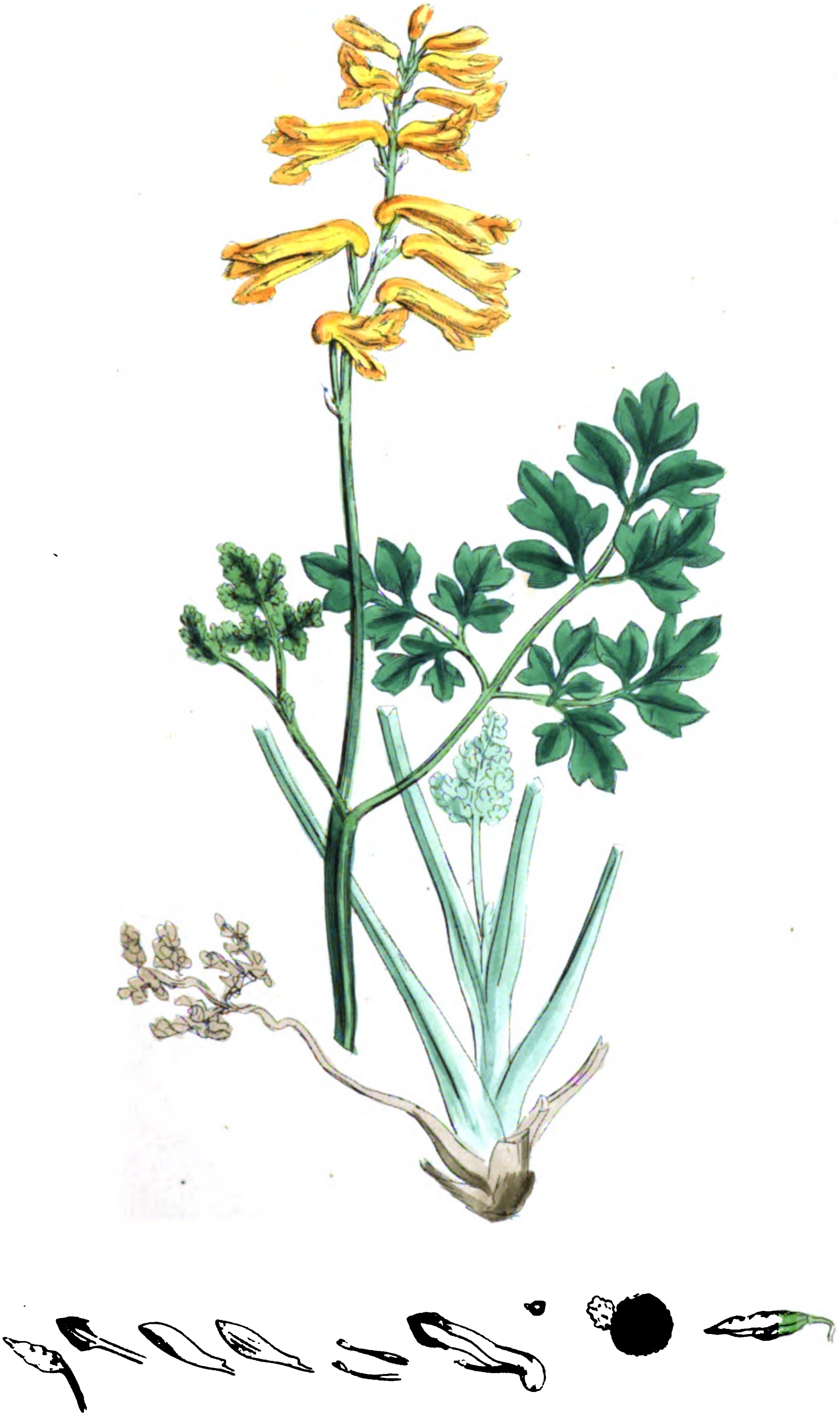
LXVIII.



E. B. 1471.

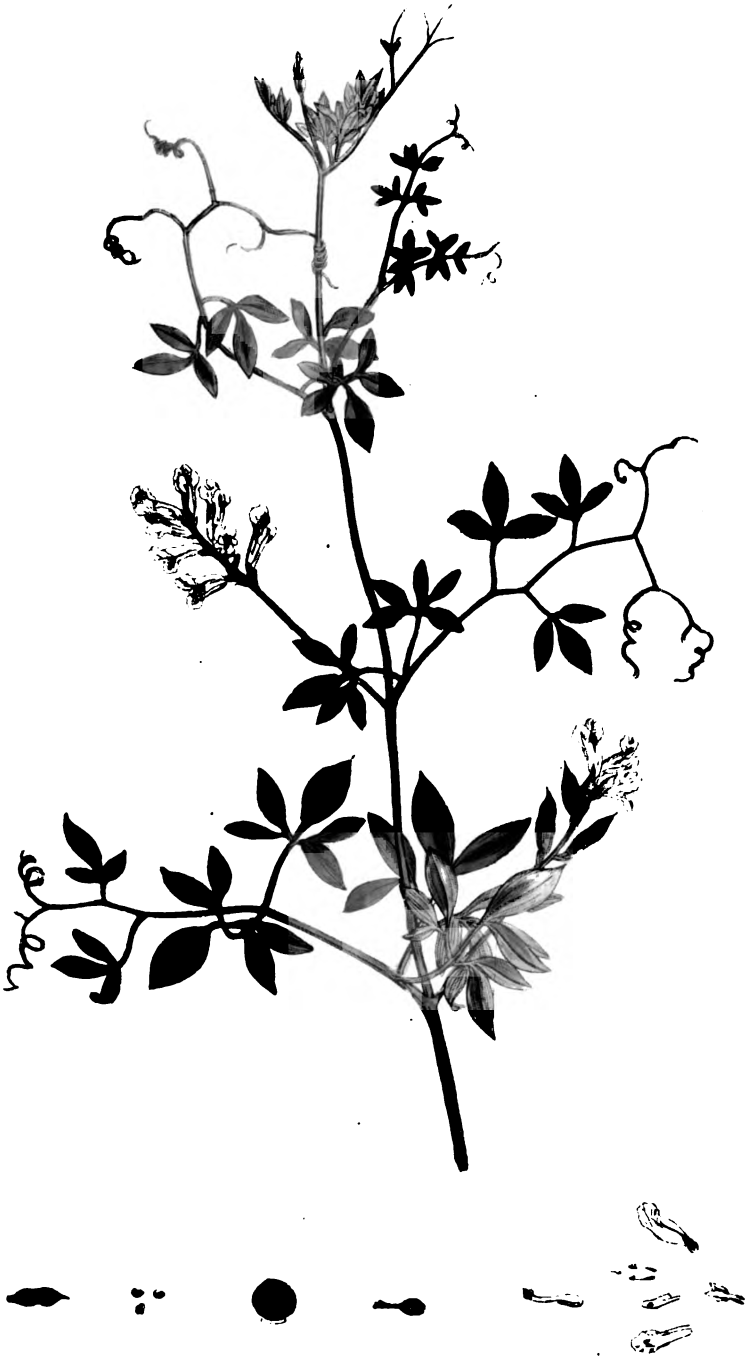
Corydalis solida.   Solid Bulbous Fumitory.

LXIX.



E. B. 588.

Corydalis lutea. Yellow Fumitory.

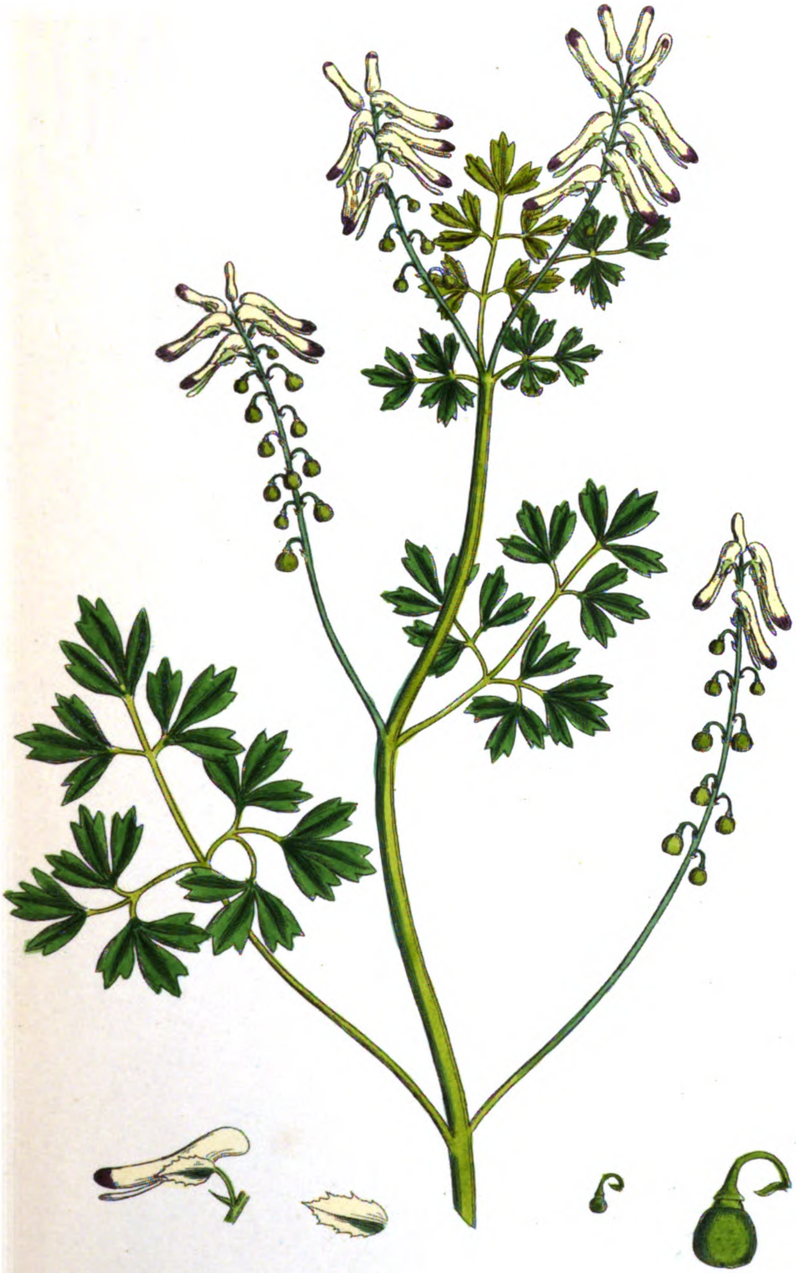


E. B. 103.

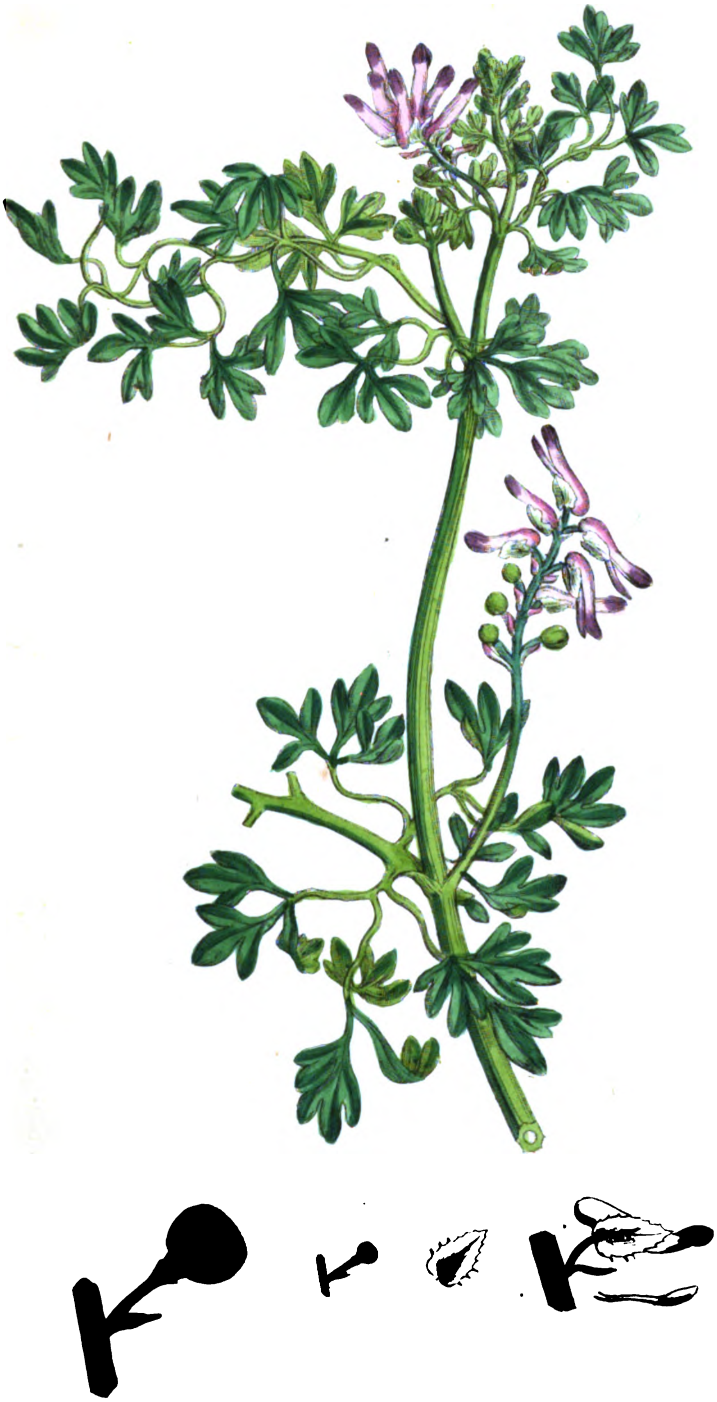
Corydalis claviculata.   White climbing Fumitory.

missprint LXXI.

LXXII.

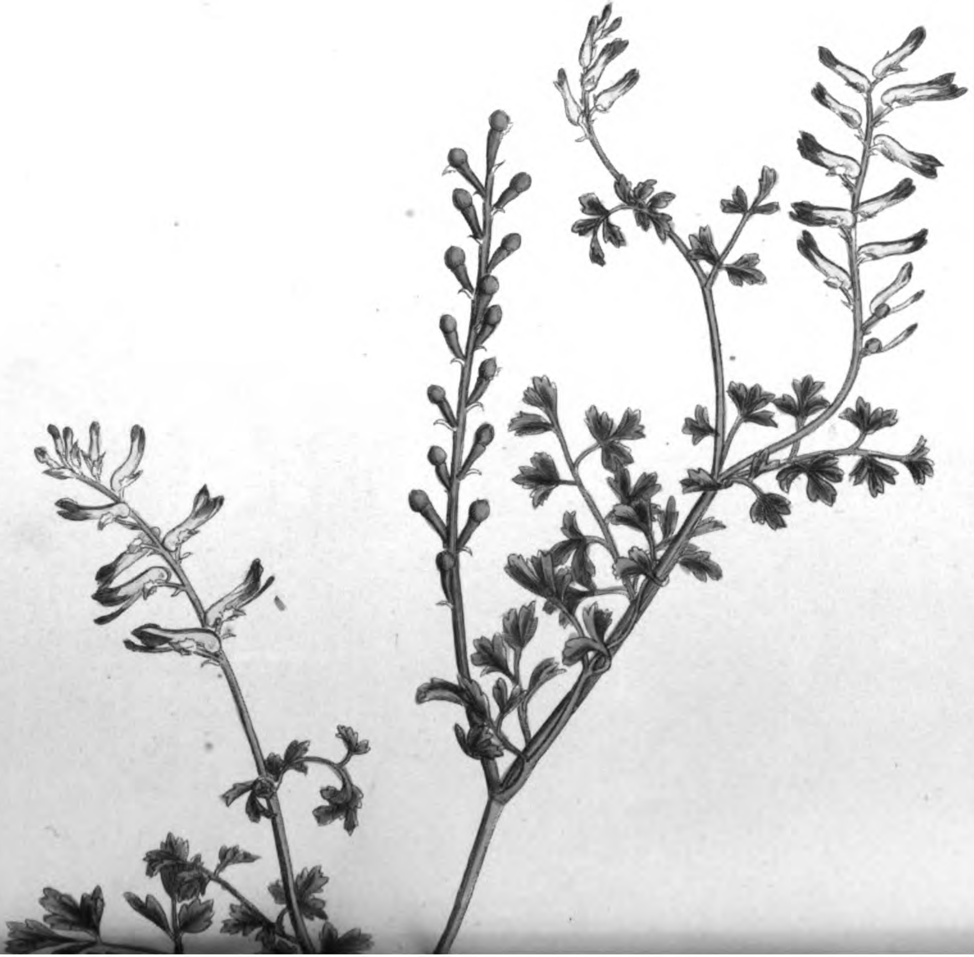


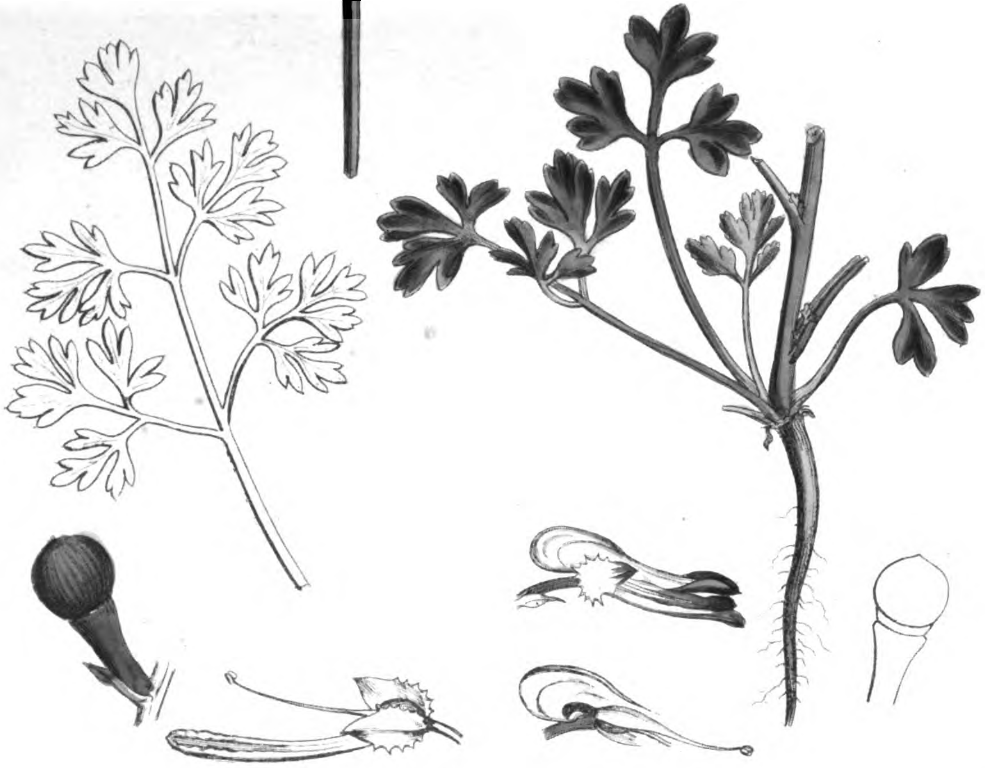
Fumaria Pallidiflora. Pale flowered Fumitory.



E. B. 943.

Fumaria Boræi. Boreau's Rampant Fumitory.

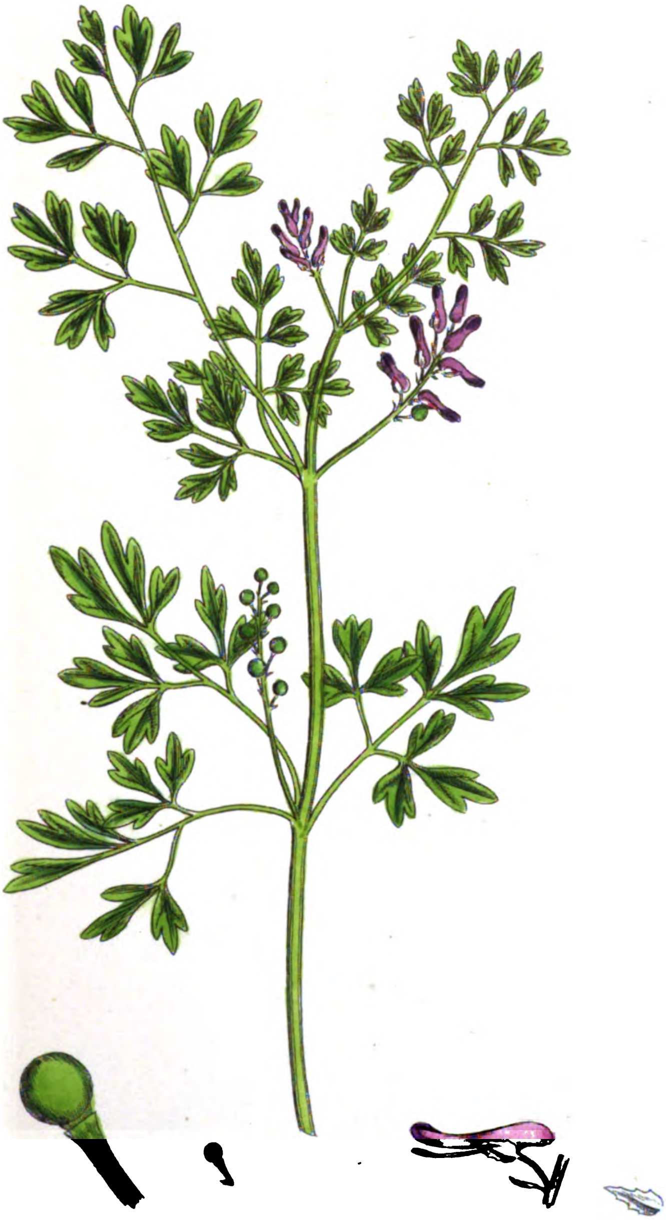




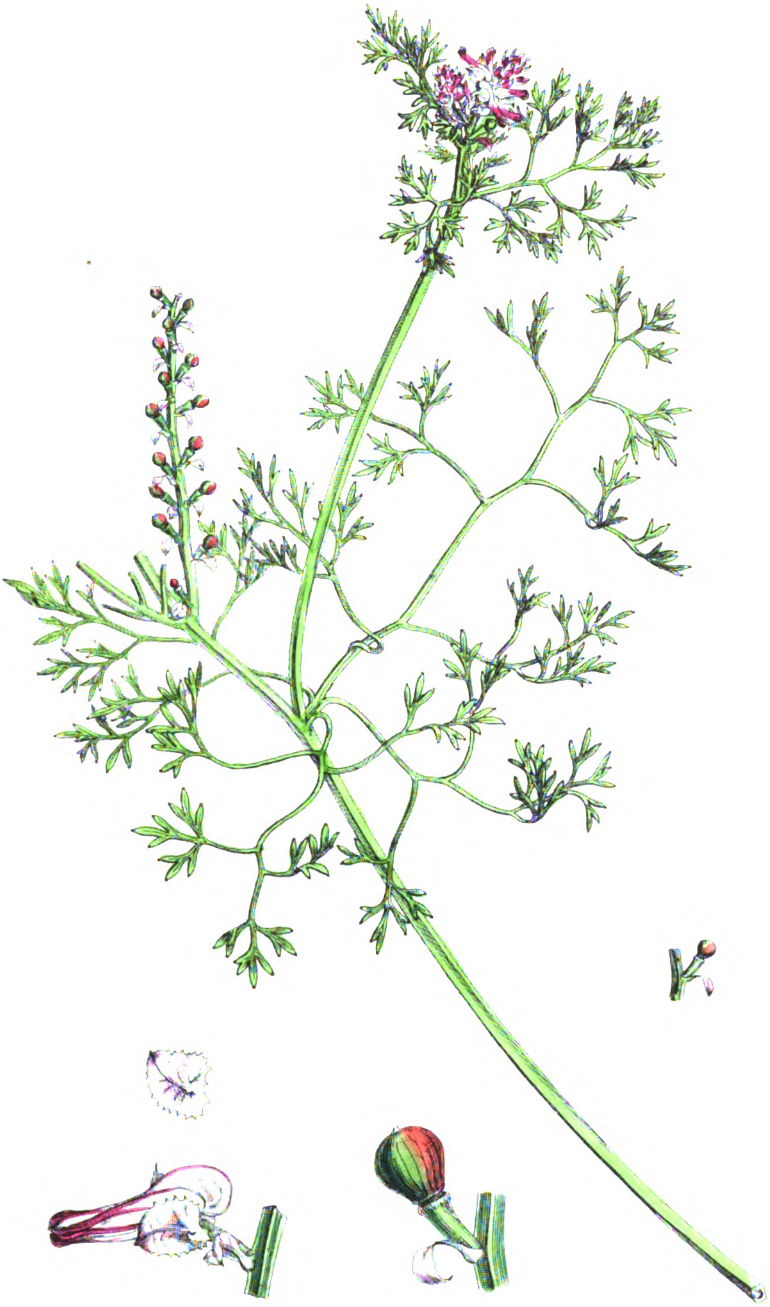
E. B. S. 2976.

Fumaria confusa. Bastard's Rampant Fumitory.

LXXIV.

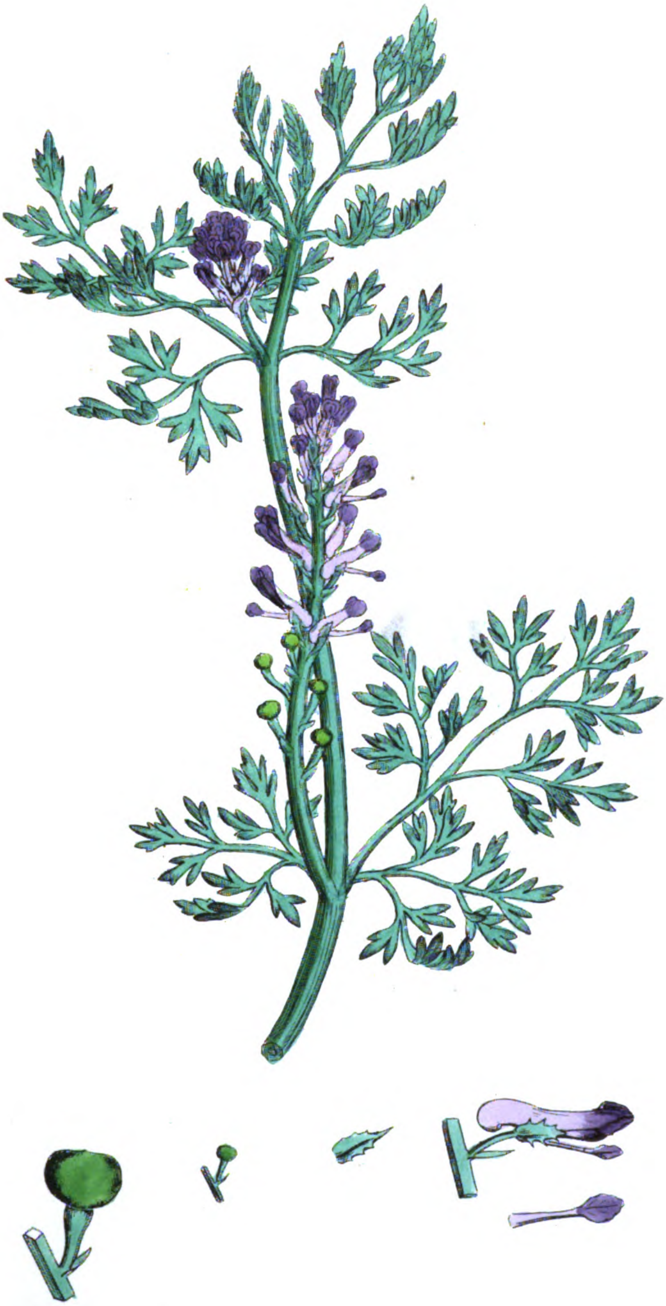


Fumaria muralis . Rampant Fumitory.



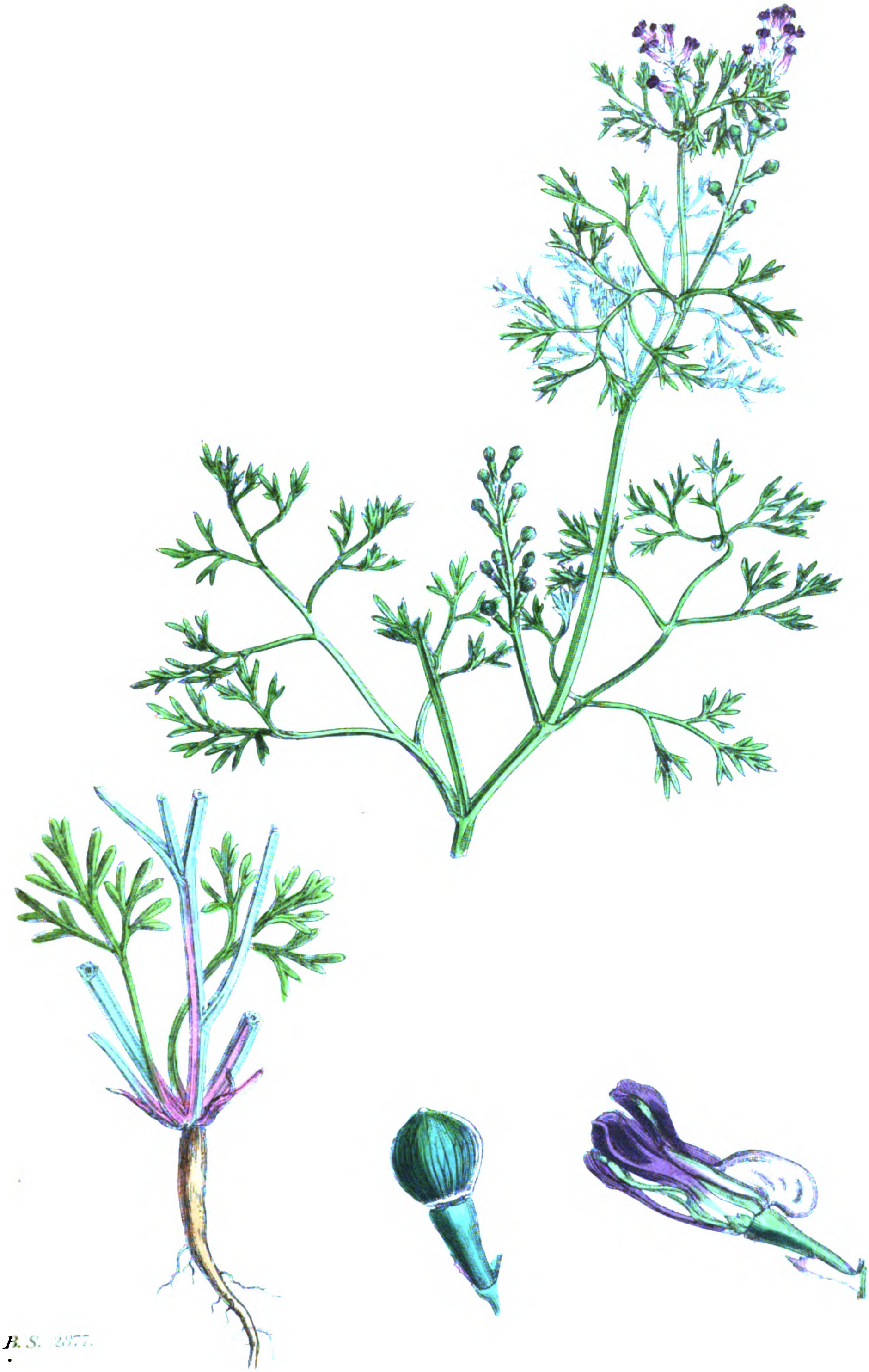
E. B. S. 2876.

Fumaria micrantha. Close-flowered Fumitory.

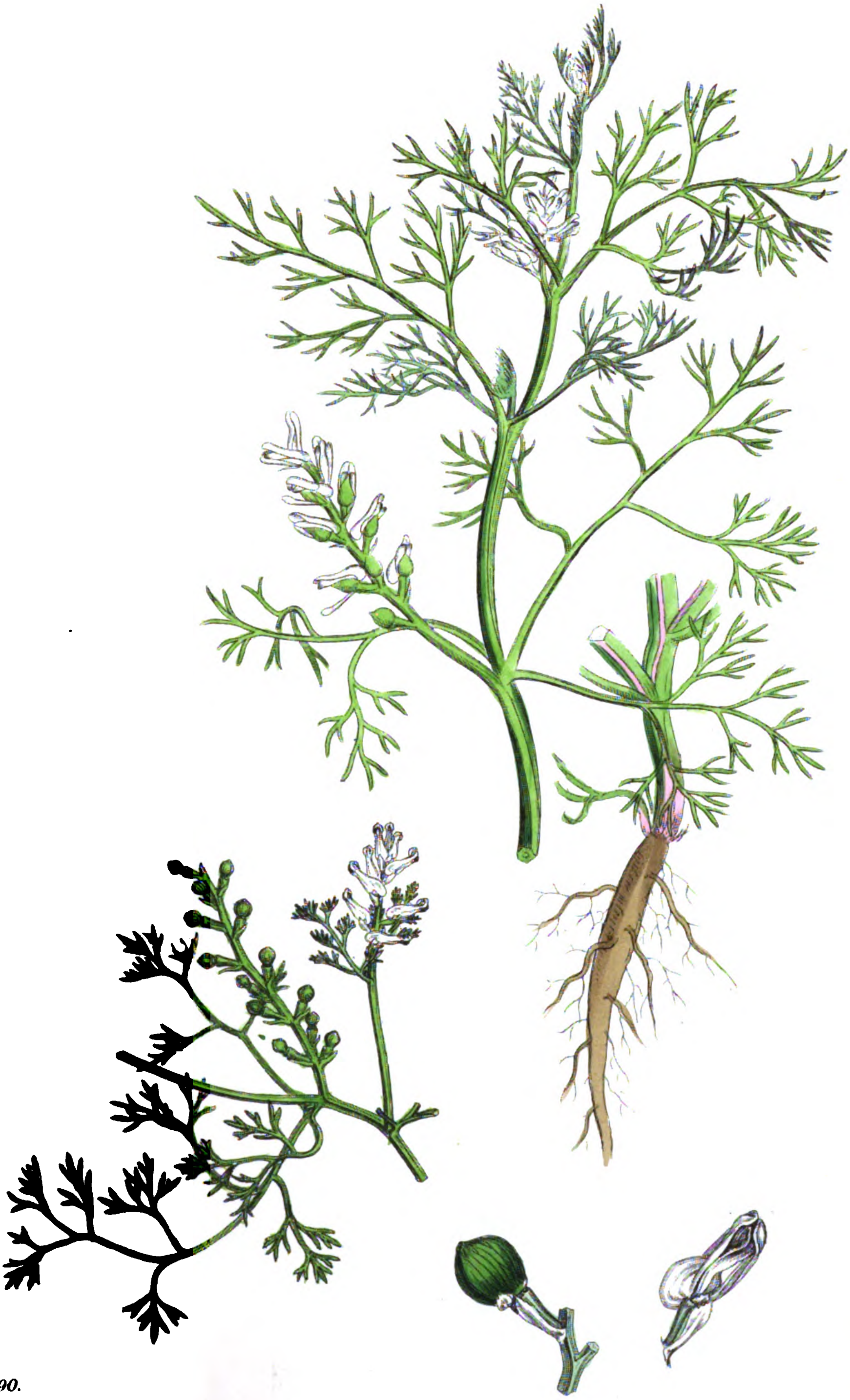


E. B. 589.

Fumaria officinalis. Common Fumitory.



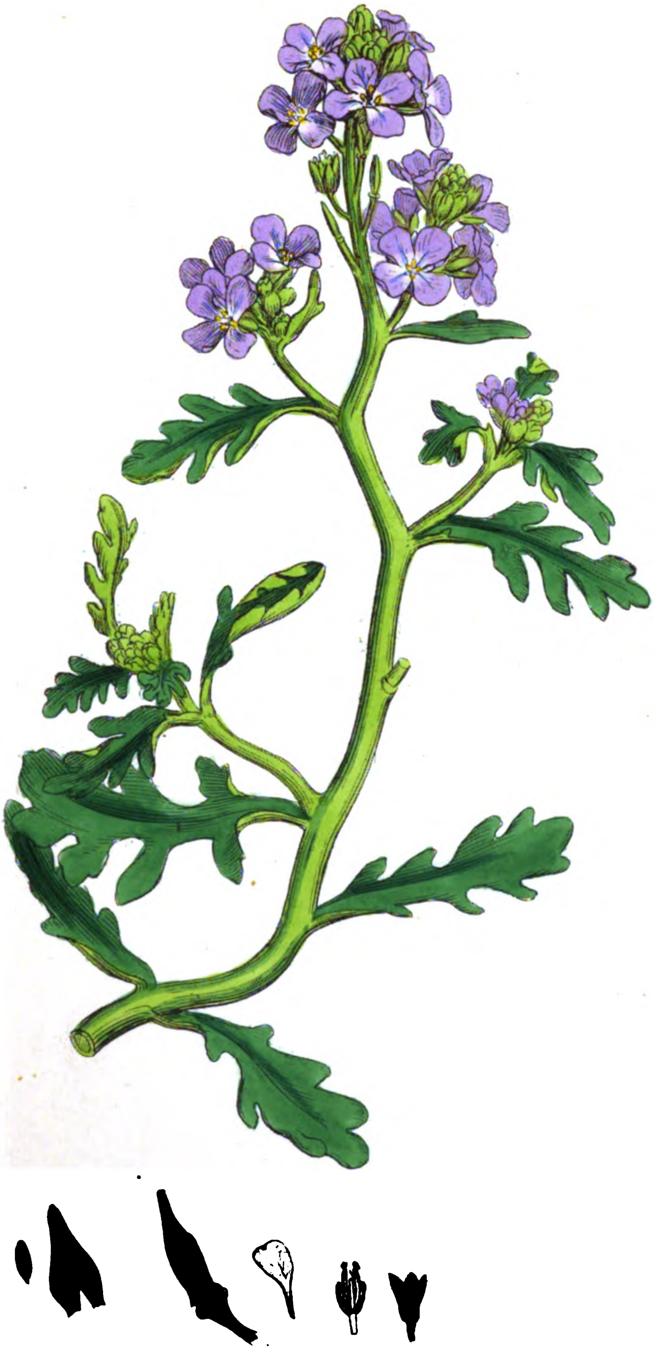
Fumaria Vaillantii.   Vaillant's Small-flowered Fumitory.



E. B. 590.

Fumaria parviflora. Lamark's small flowered Fumitory.

LXXIX.

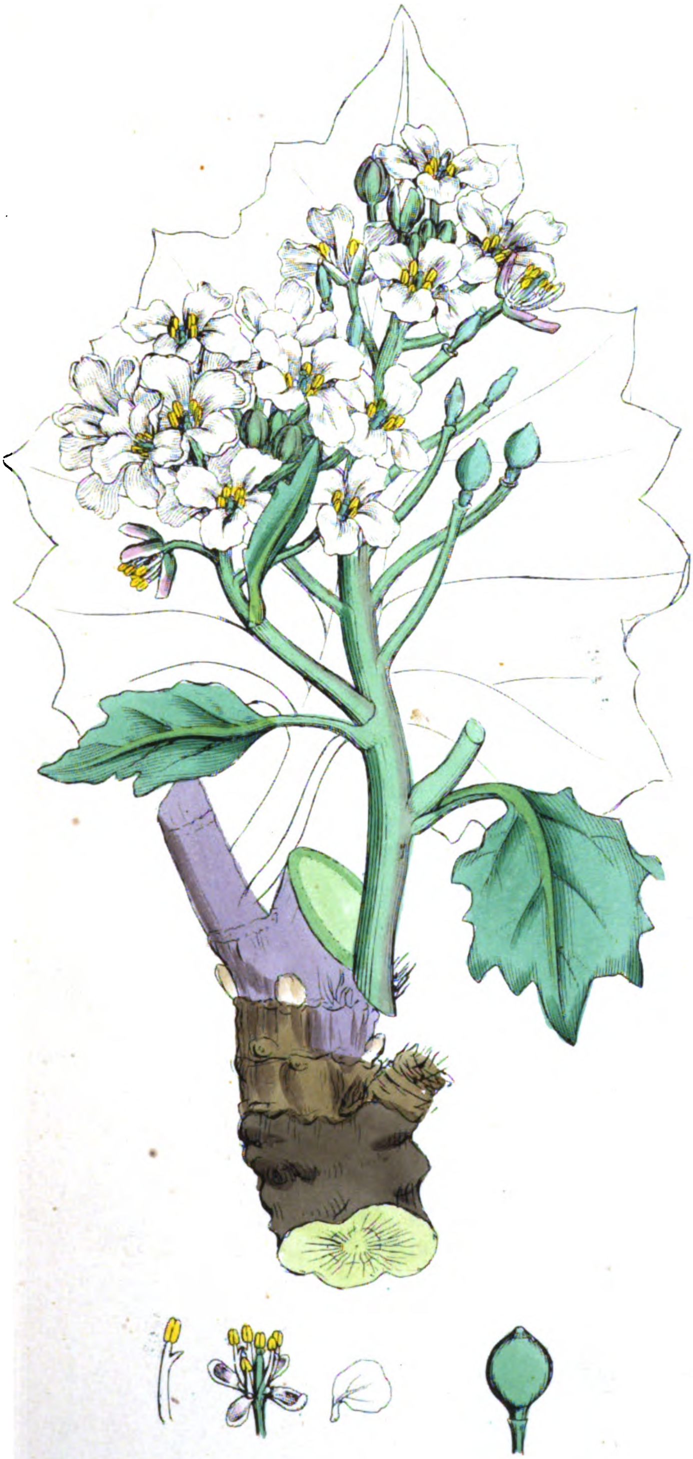


E. B. 231.

Cakile maritima. Sea Rocket.

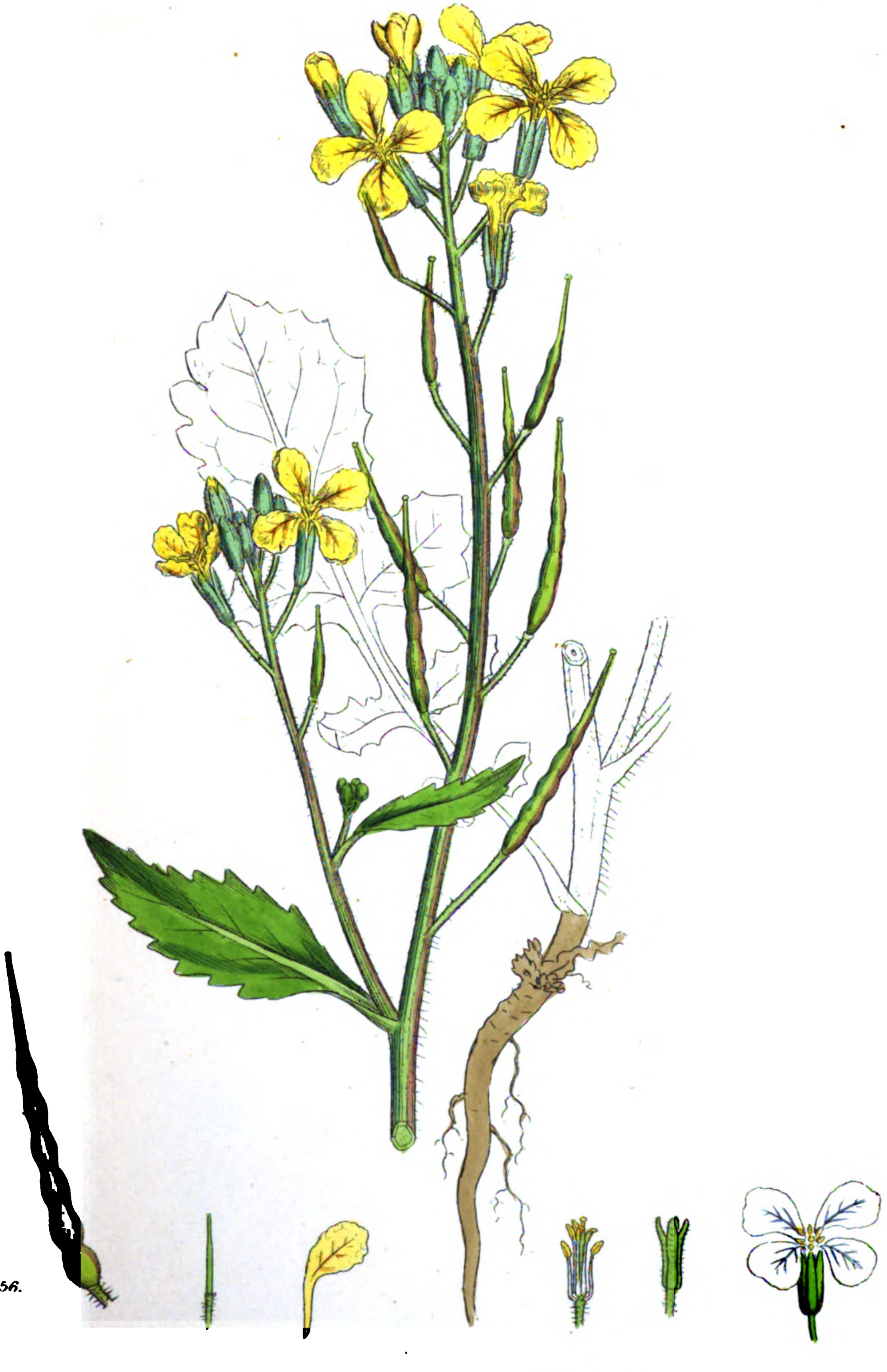
LXXX.

E. B. 924.



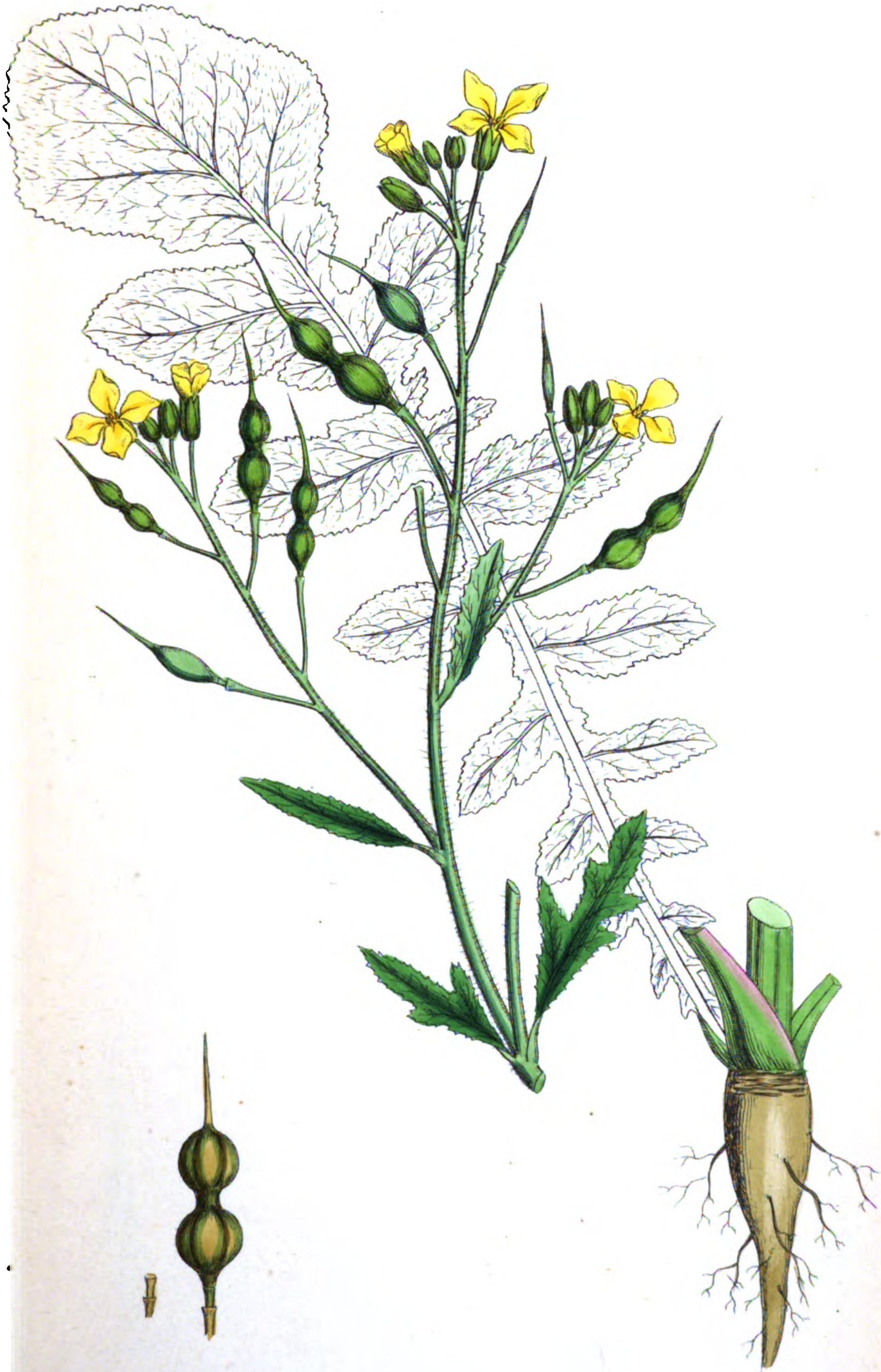
Crambe maritima. Sea Kale.

LXXXI.

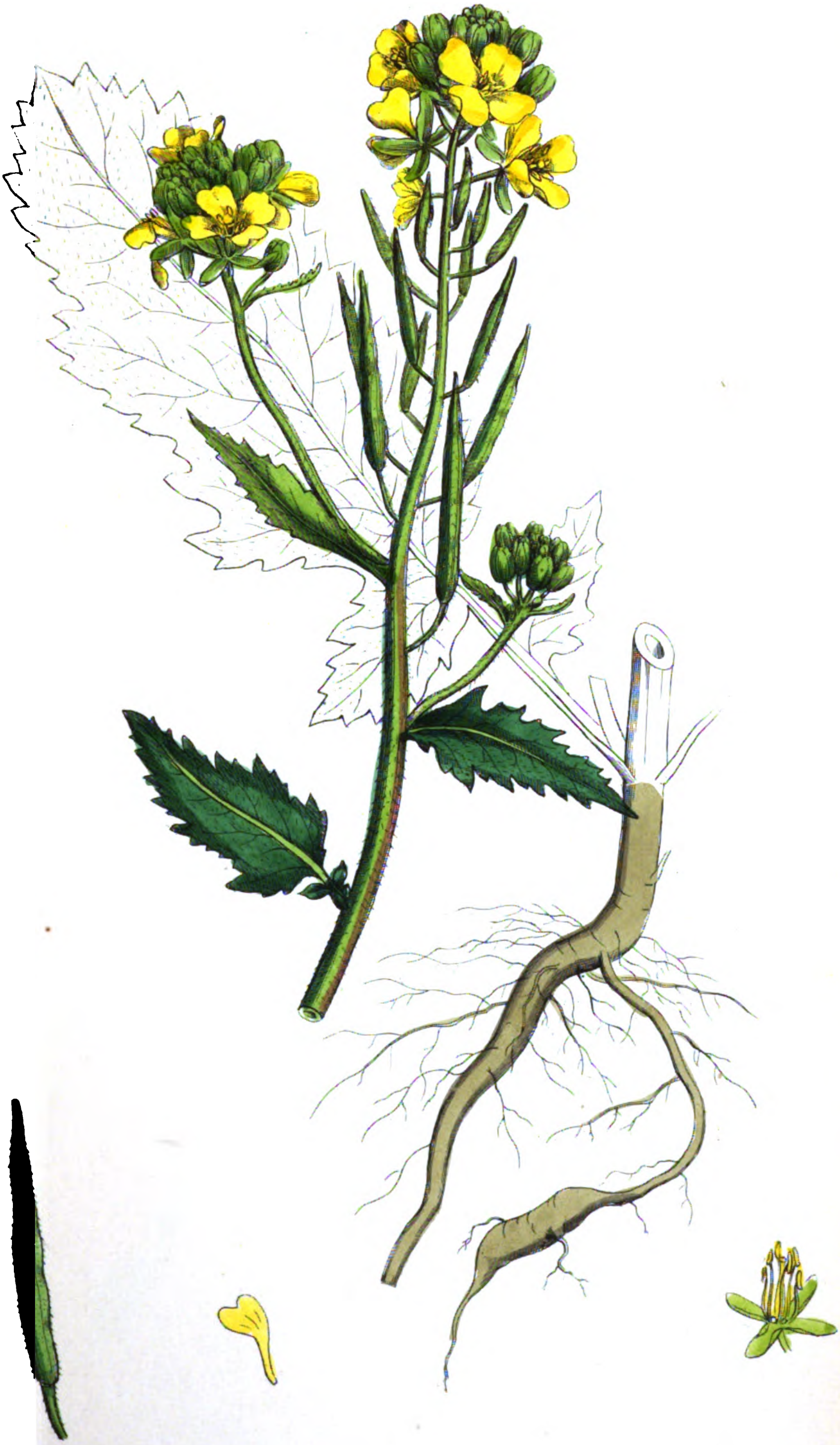


E. B. 856.

Raphanus Raphanistrum. Wild Radish.

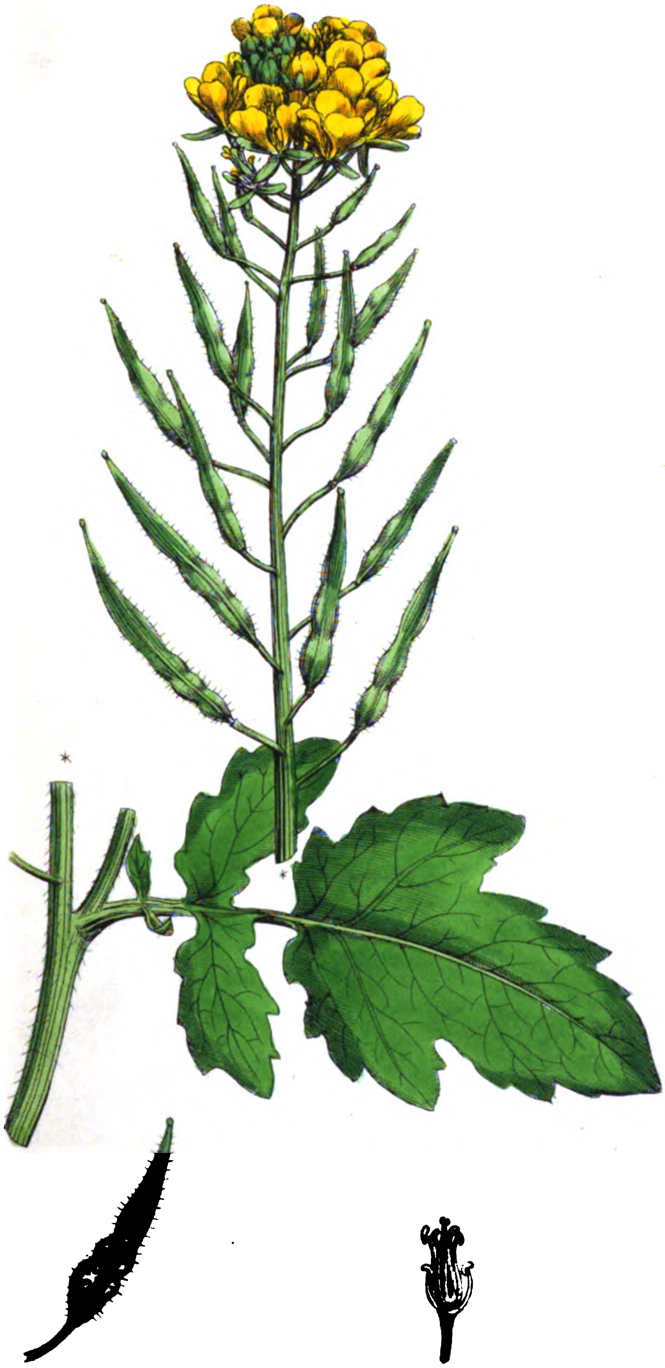


Raphanus maritimus. Sea Radish.



E. B. 1748.

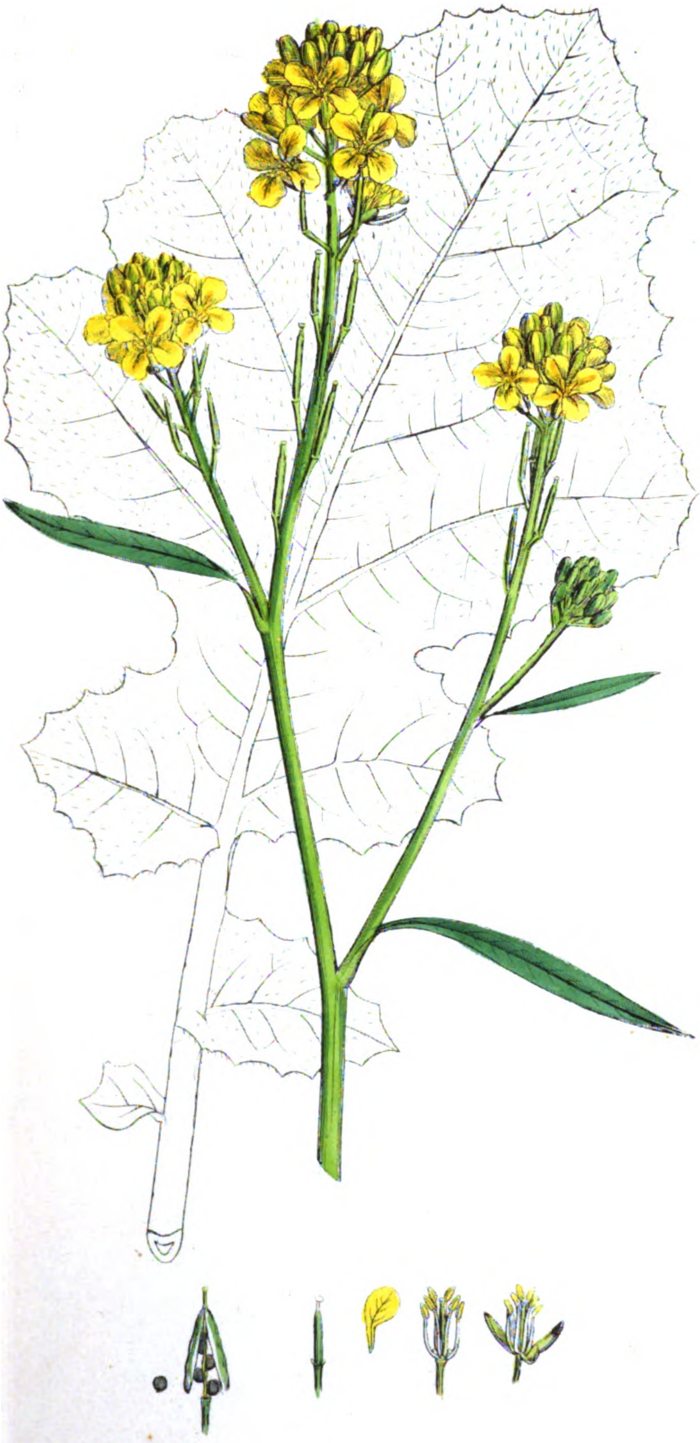
Brassica Sinapistrum. Wild Mustard.



E. B. 1677.

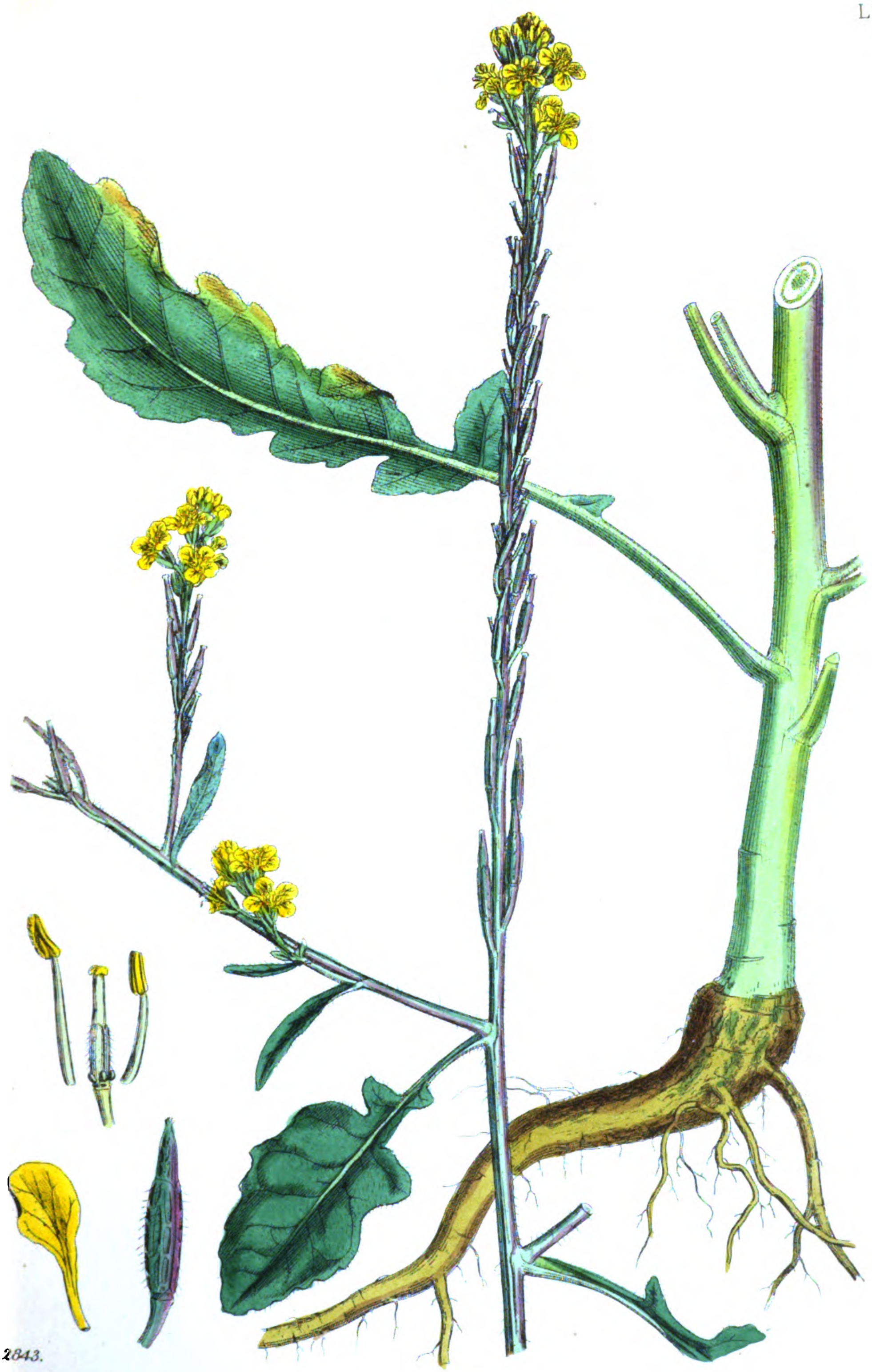
Brassica alba. White Mustard.

LXXXV.



E. B. 969.

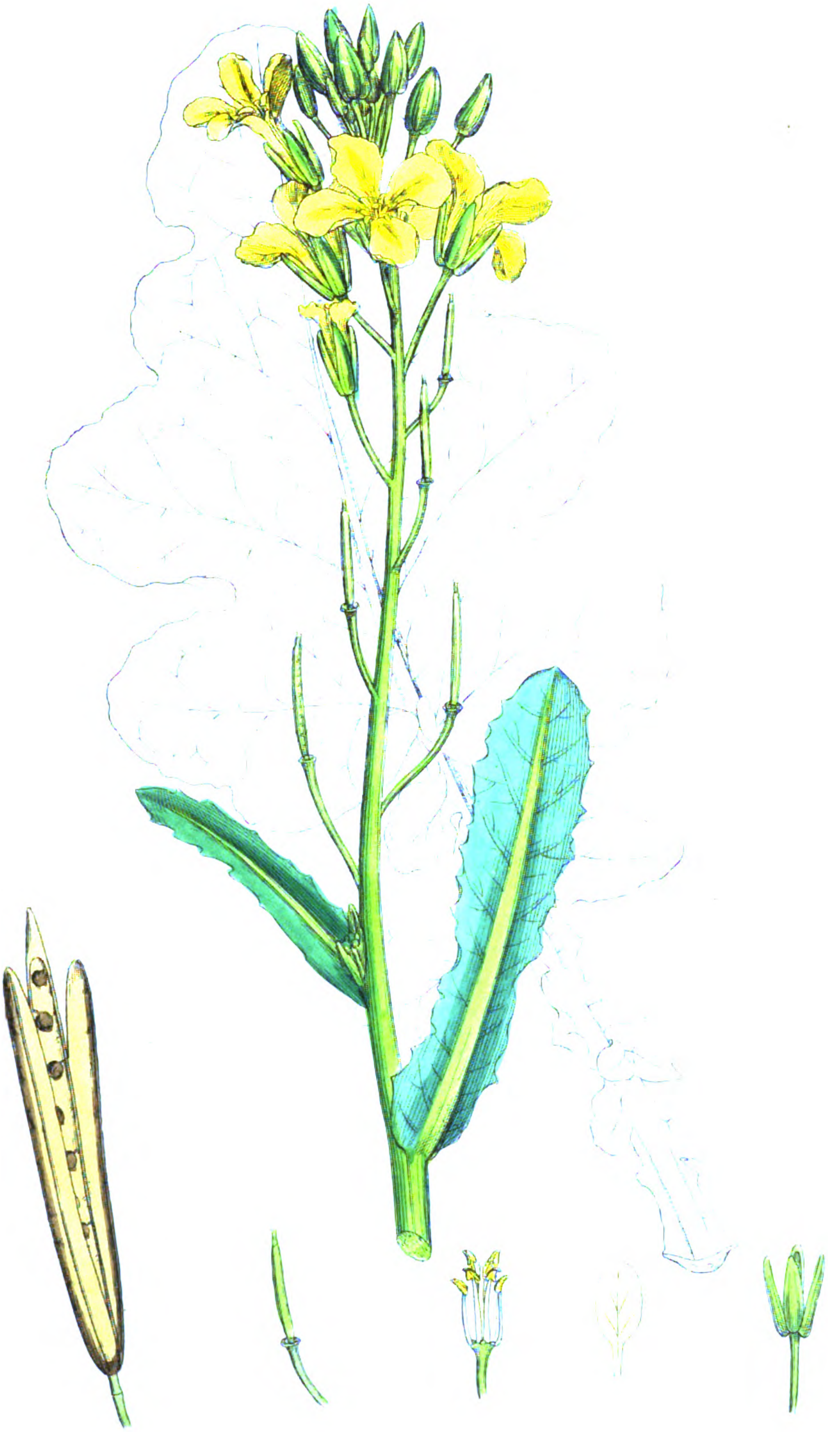
Brassica nigra. Black Mustard.



E.B.S. 2843.

Brassica adpressa. Hoary Mustard.

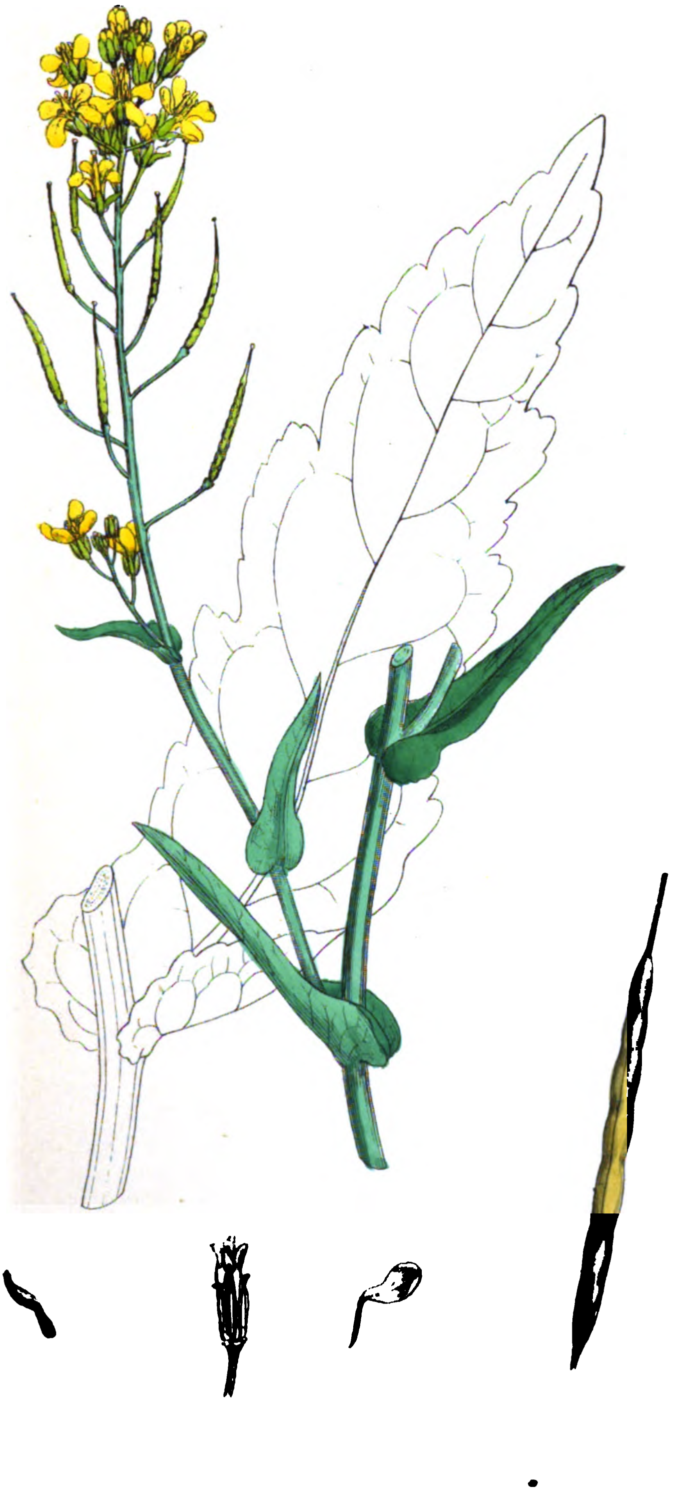
LXXXVII.



E. B. 637.

Brassica oleracea.   Sea Cabbage.

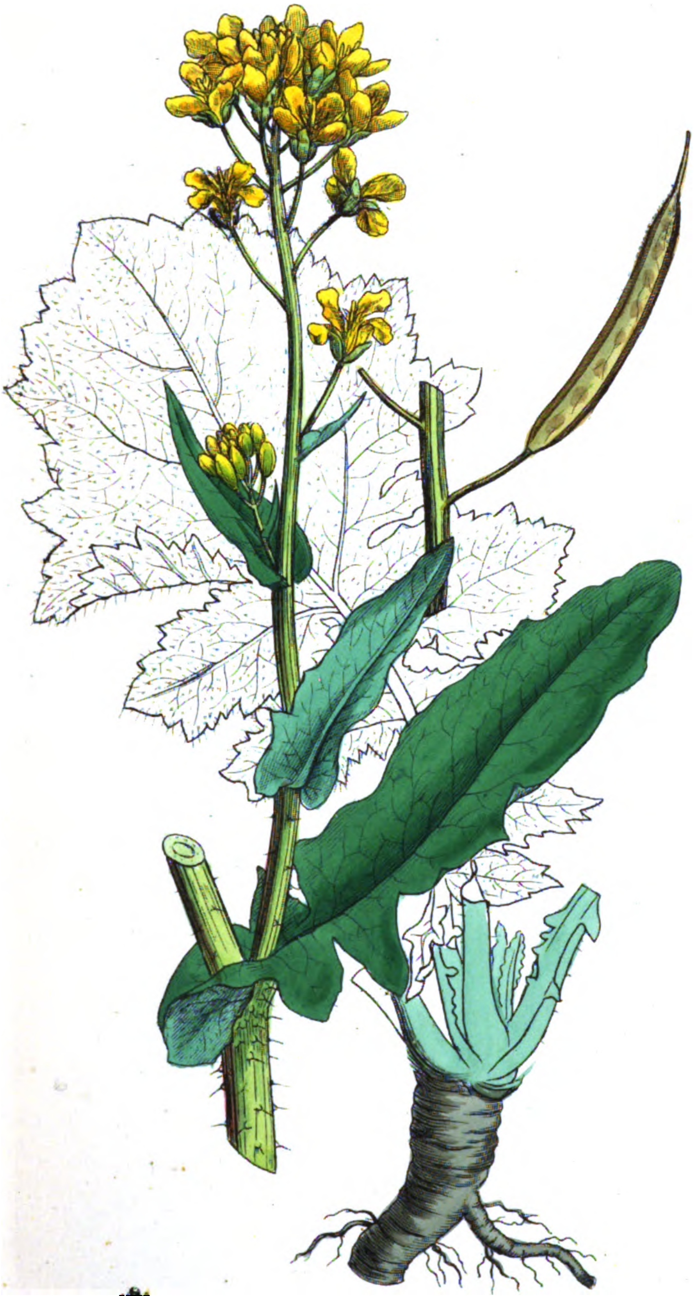
LXXXVIII.



E. B. 2146.

Brassica Napus.   Rape.

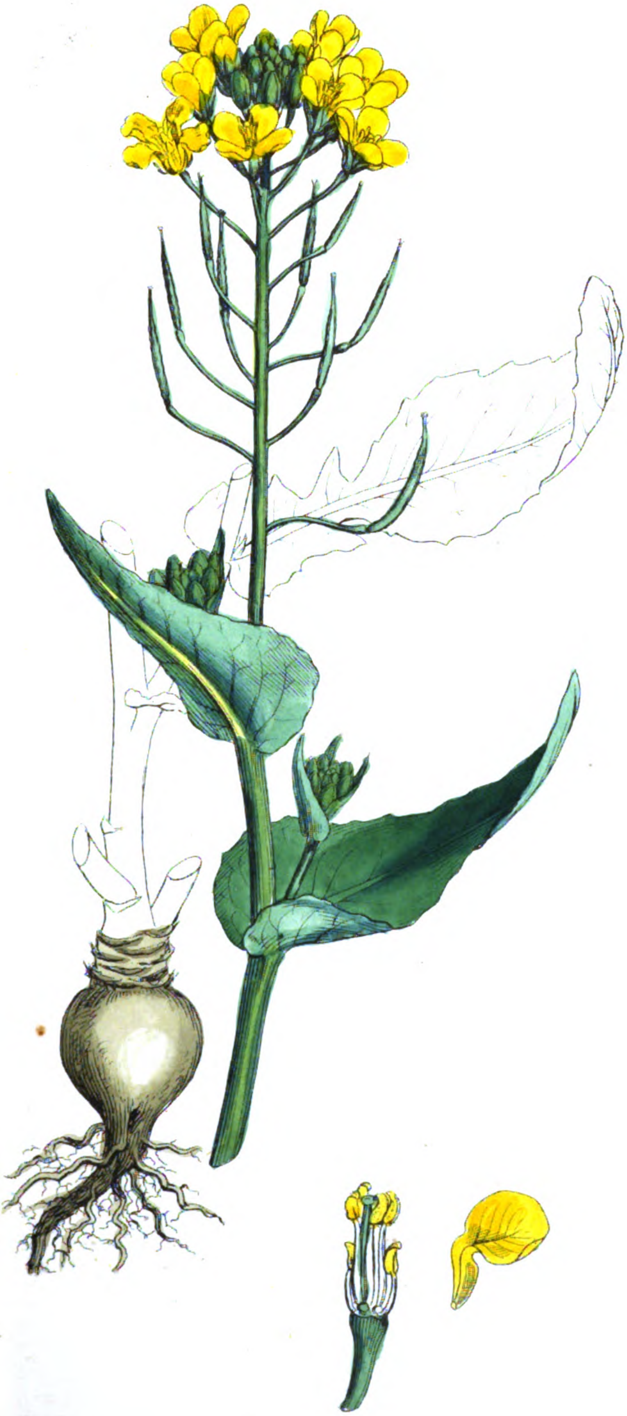
LXXXIX.



E. B. 2234.

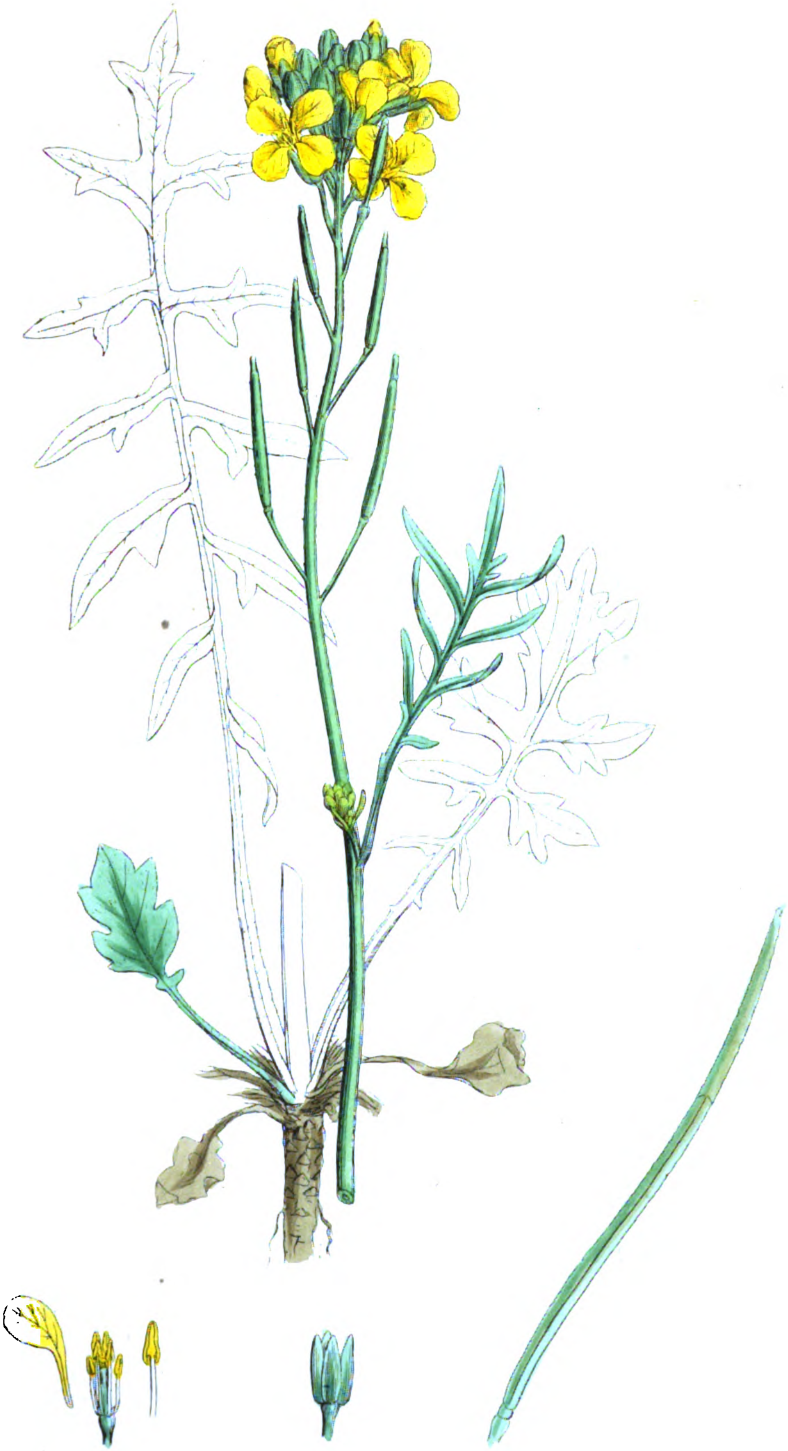
Brassica campestris. Wild Neveu.

XC.



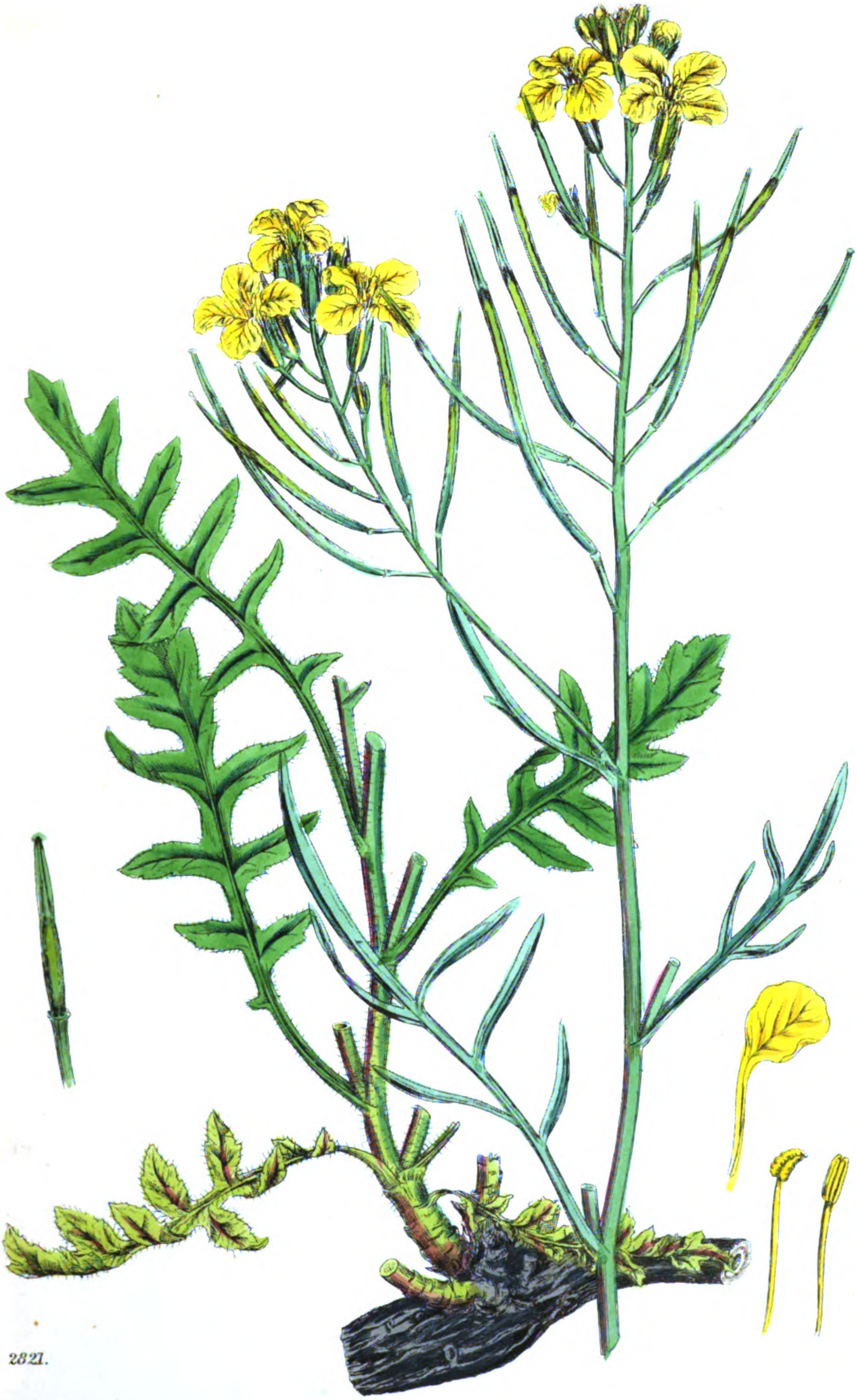
E. B. 2176.

Brassica rapa. Common Turnip.



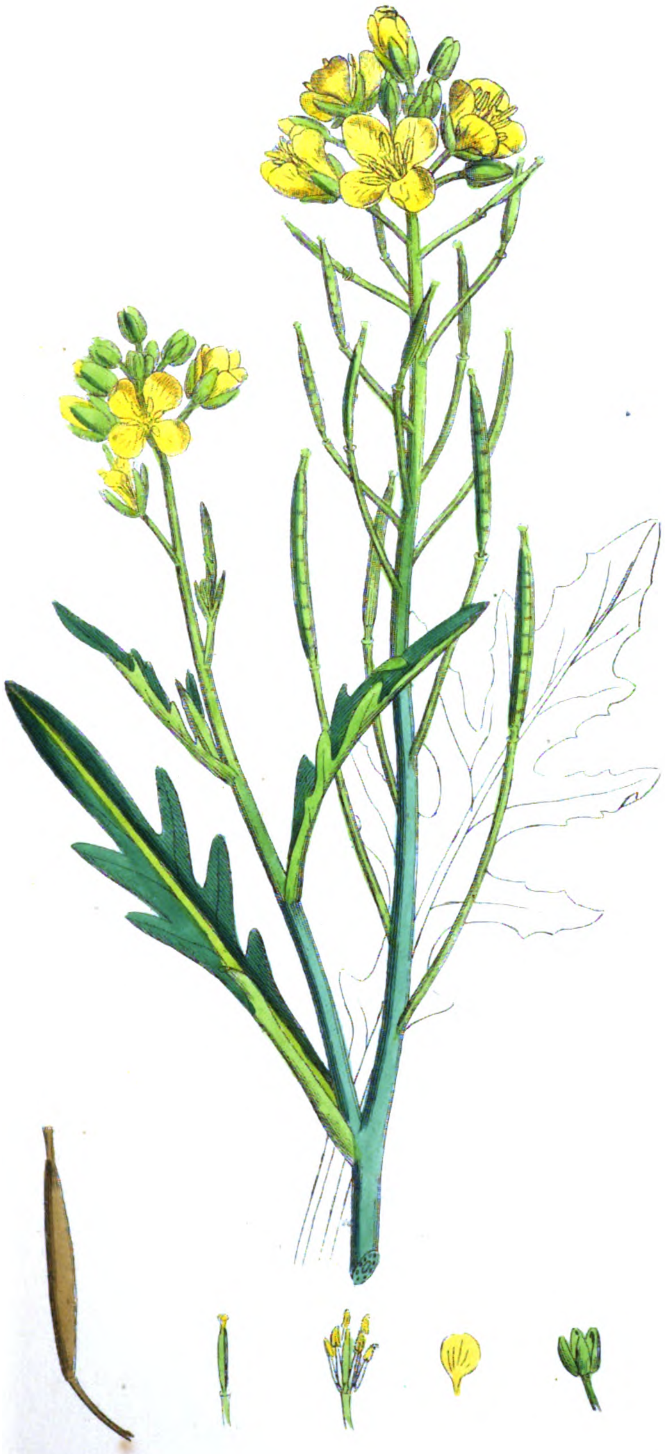
E. B. 962.

Brassica eu-monensis. Dwarf wallflower-cabbage.



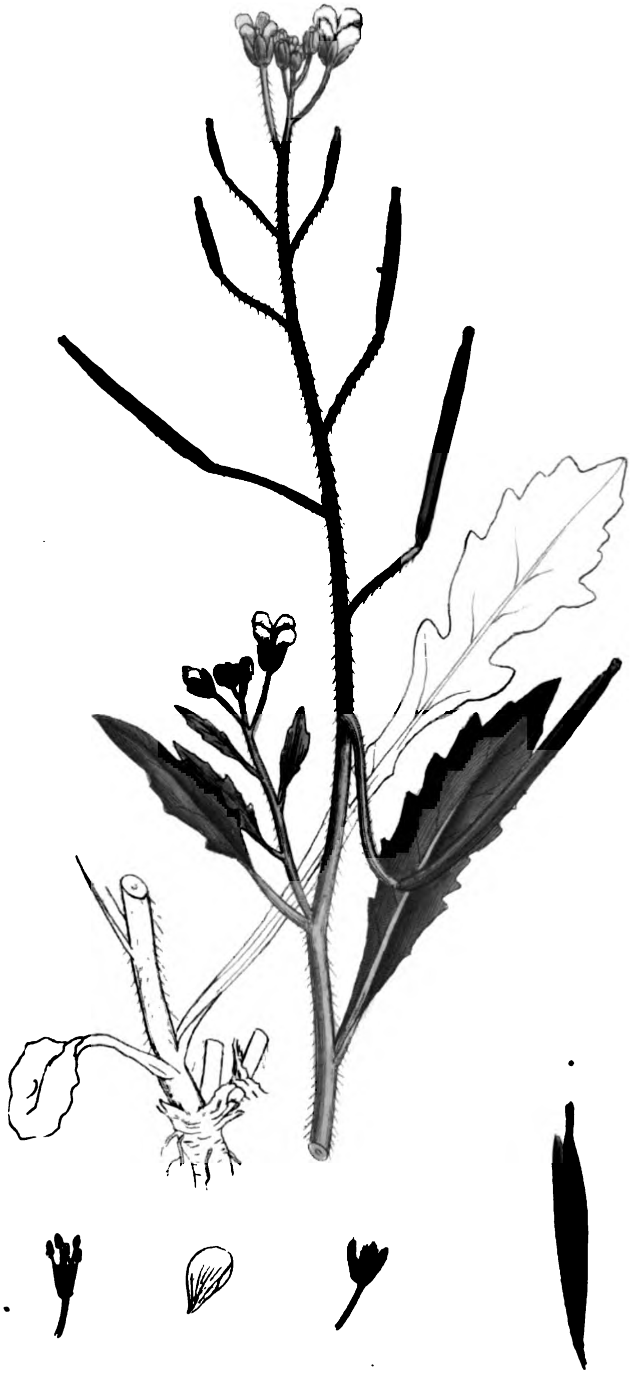
E. B. S. 2821.

Brassica Cheiranthus. Tall wallflower-cabbage



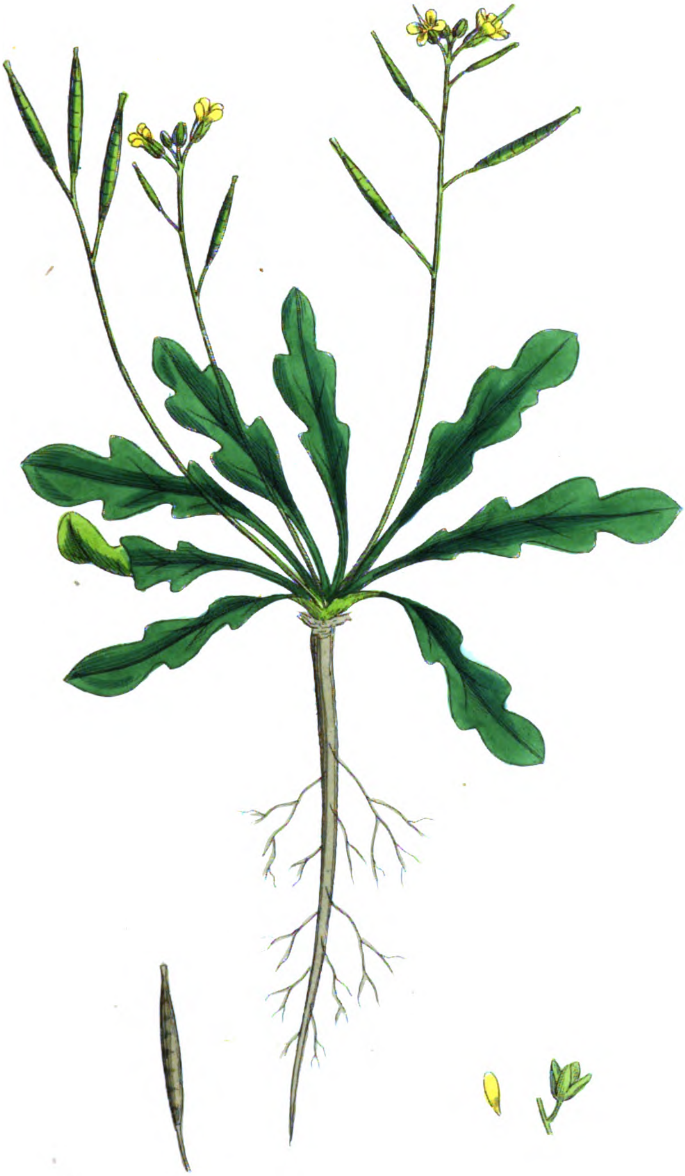
E. B. 525.

Brassica tenuifolia. Wall Rocket.



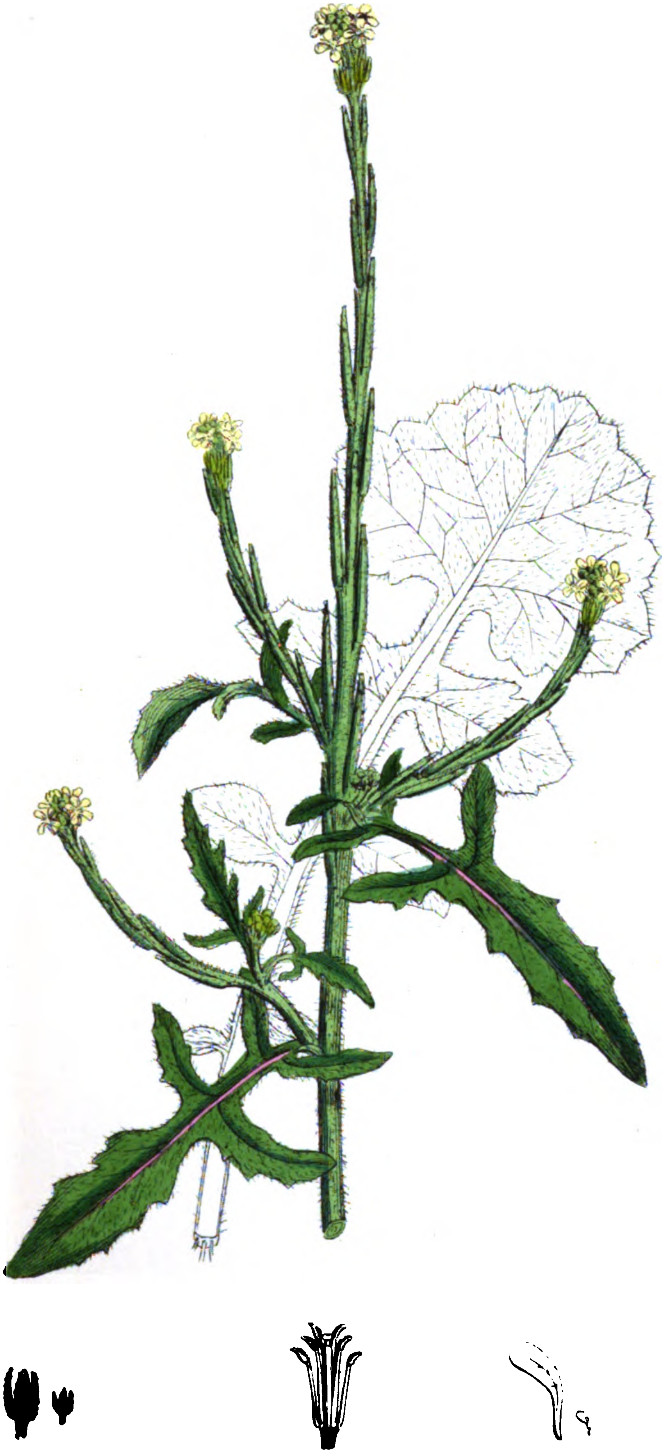
E. B. 1090.

Brassica muralis. Common Sand Rocket.



Brassica viminea. Small Sand Rocket.

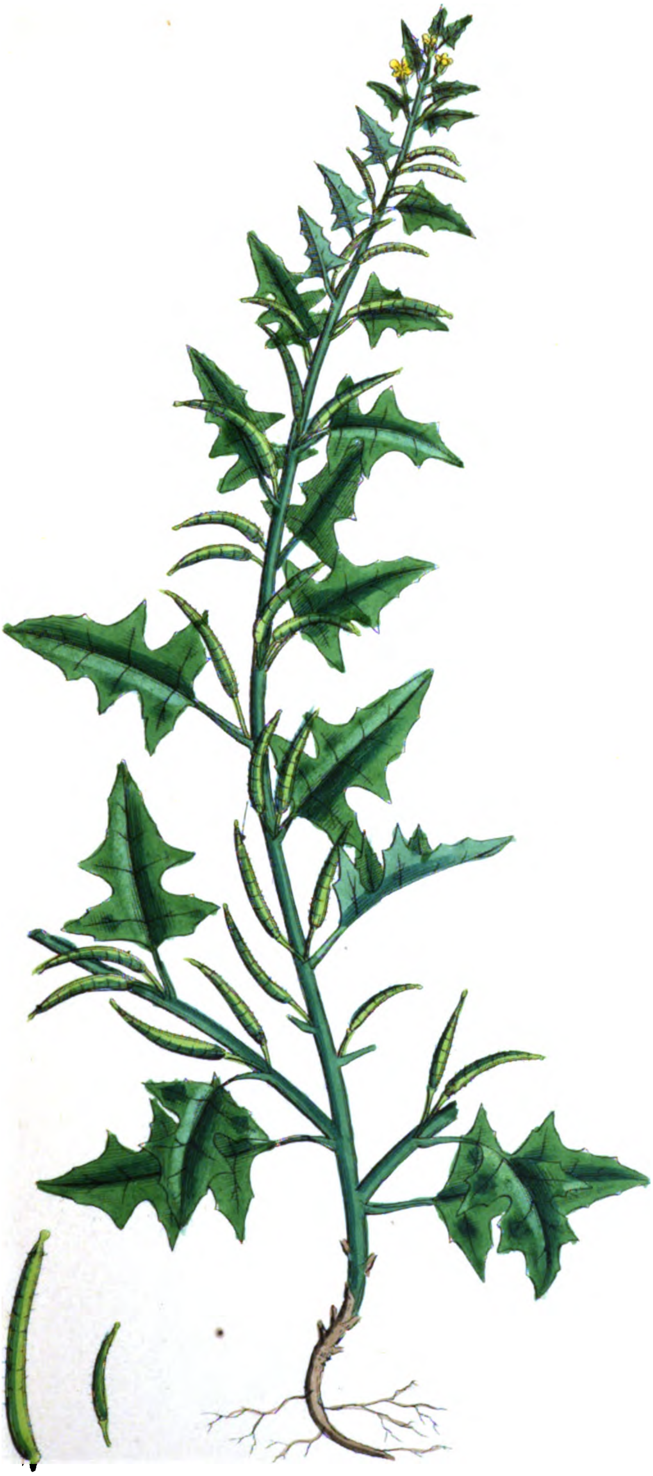
XCVI.



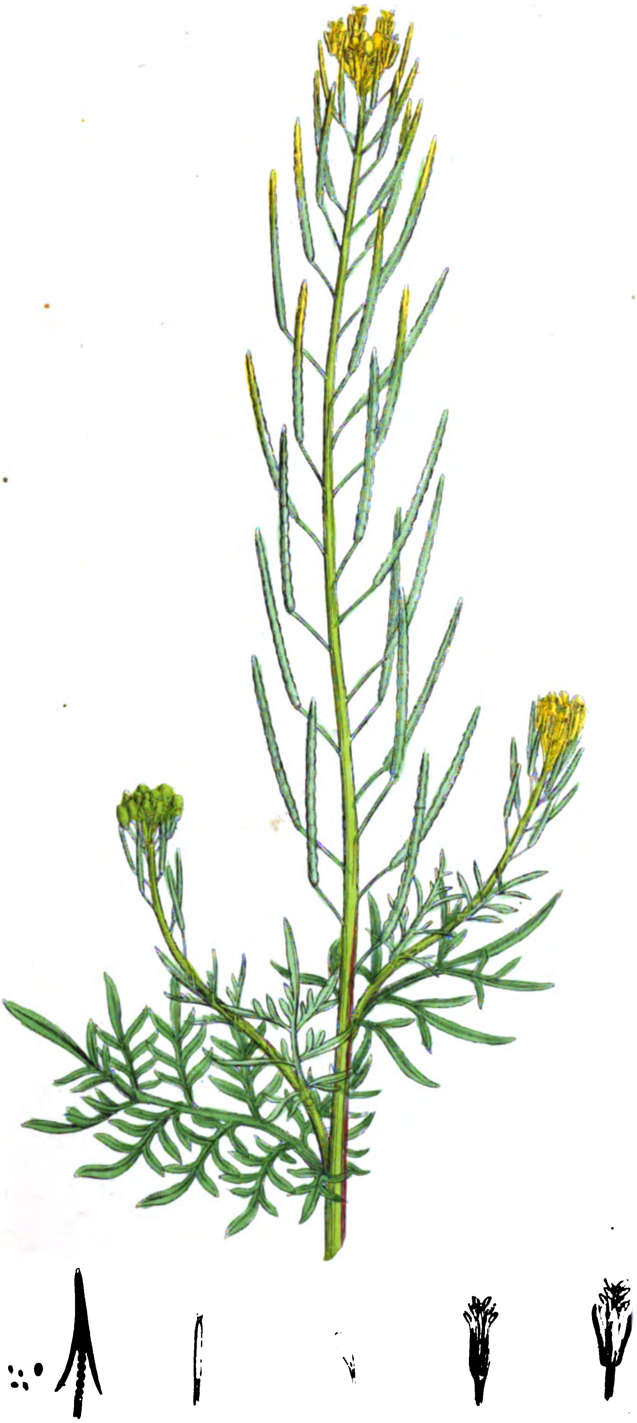
E. B. 735.

Sisymbrium officinale. · **Common Hedge-mustard.**

XCVII.



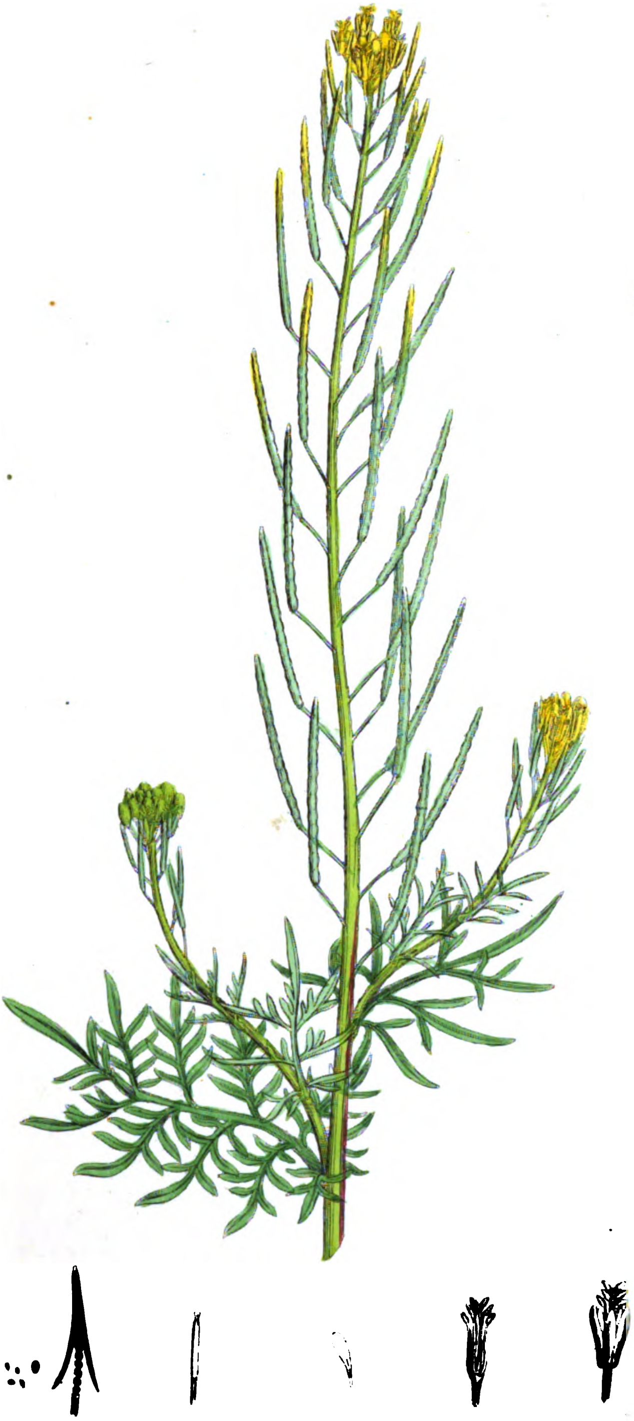
Sisymbrium polyceratium. **Prostrate Hedge-mustard.**



E. B. 963.

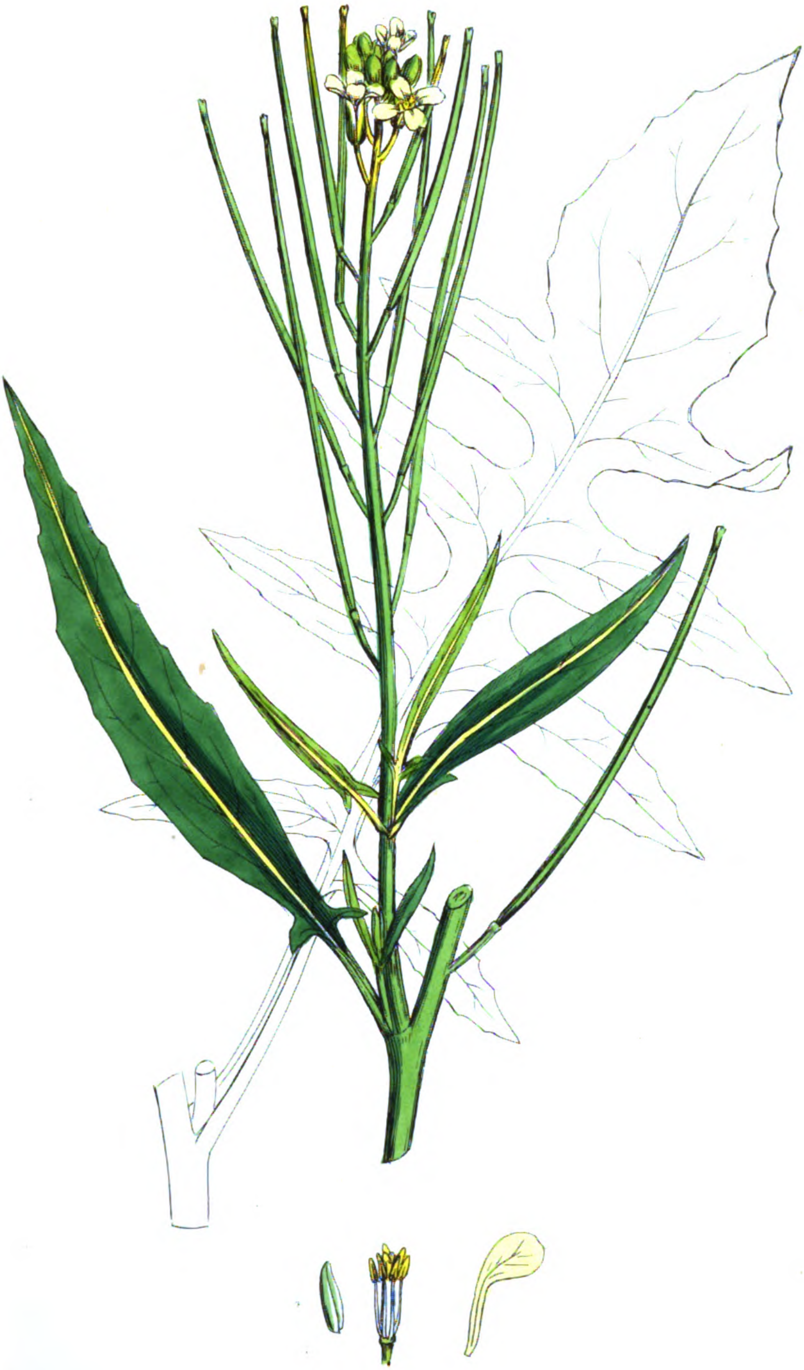
Sisymbrium Sophia. Flix-weed

XCVIII.



E. B. 963.

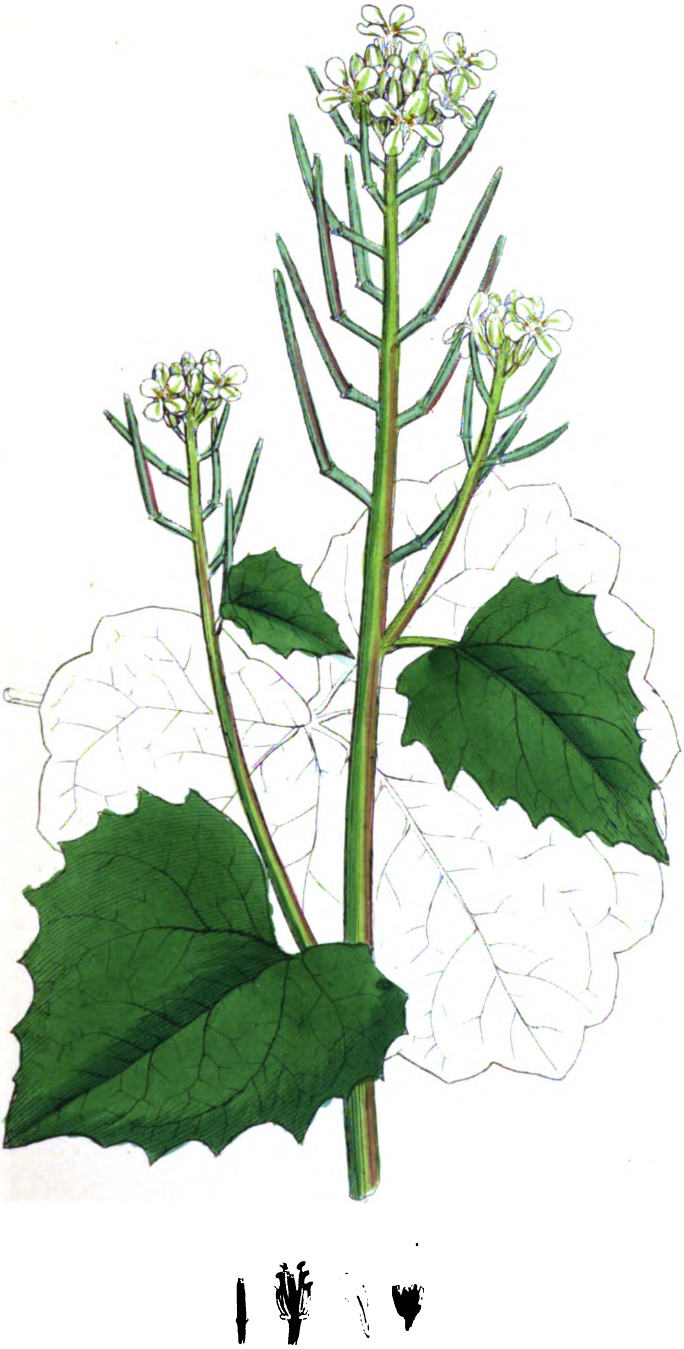
Sisymbrium Sophia. Flix-weed.



E. B. 1631.

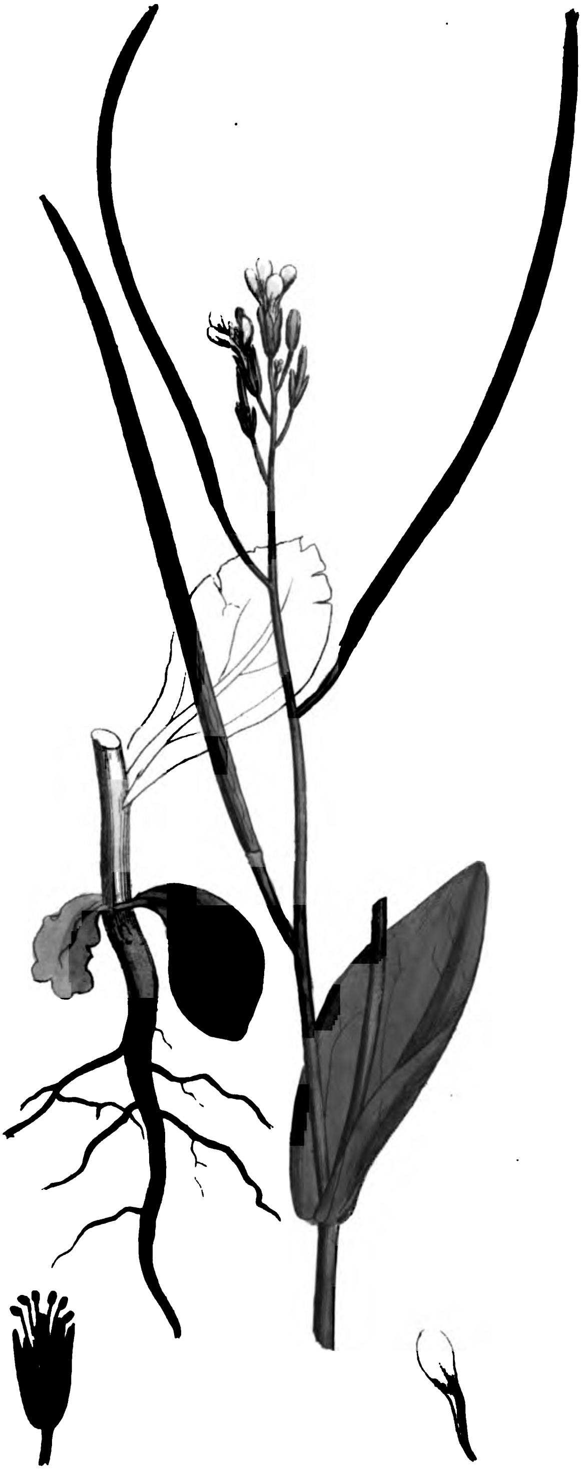
Sisymbrium Irio. London Rocket.

C.



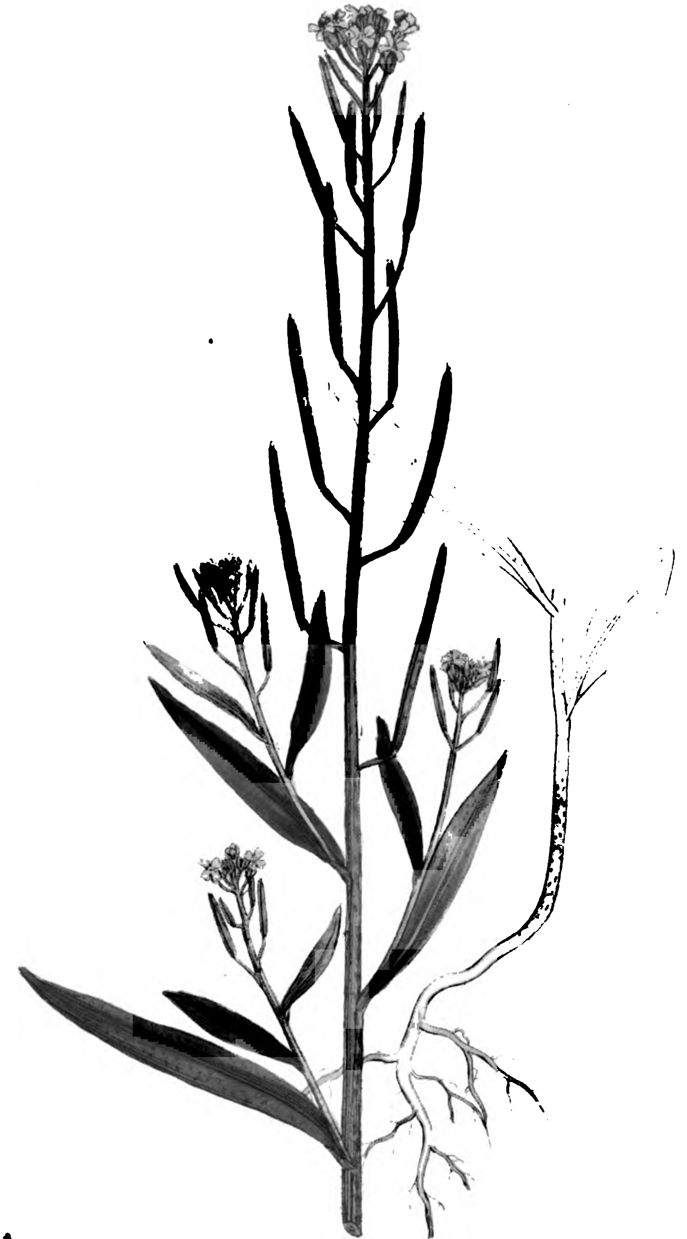
E. B. 796.

Sisymbrium Alliaria. Garlic hedge-mustard.



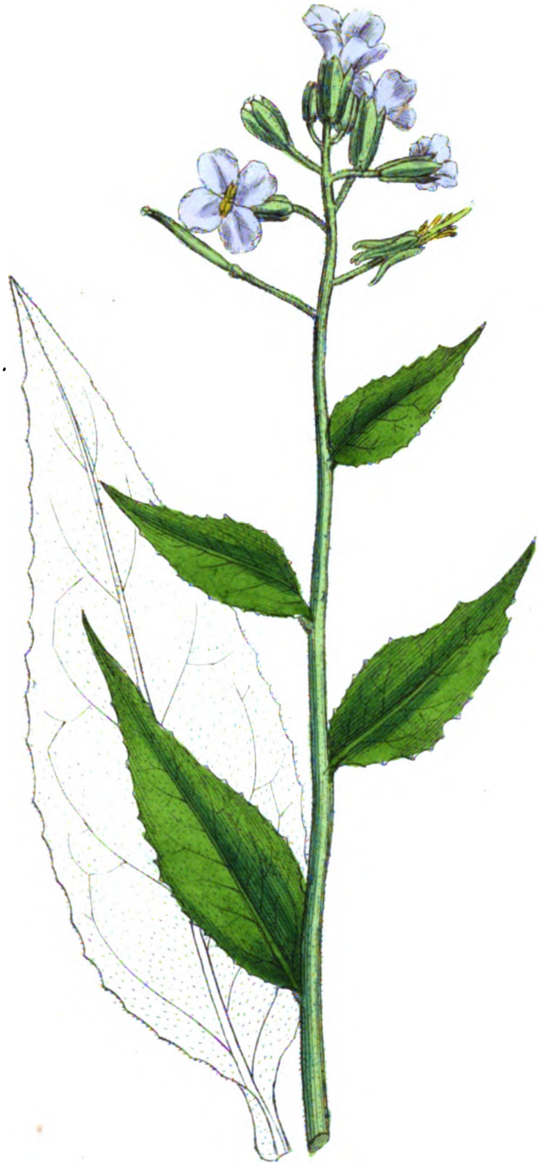
E. B. 1804.

Erysimum orientale.   Hare's-ear Cabbage.



E. B. 942.

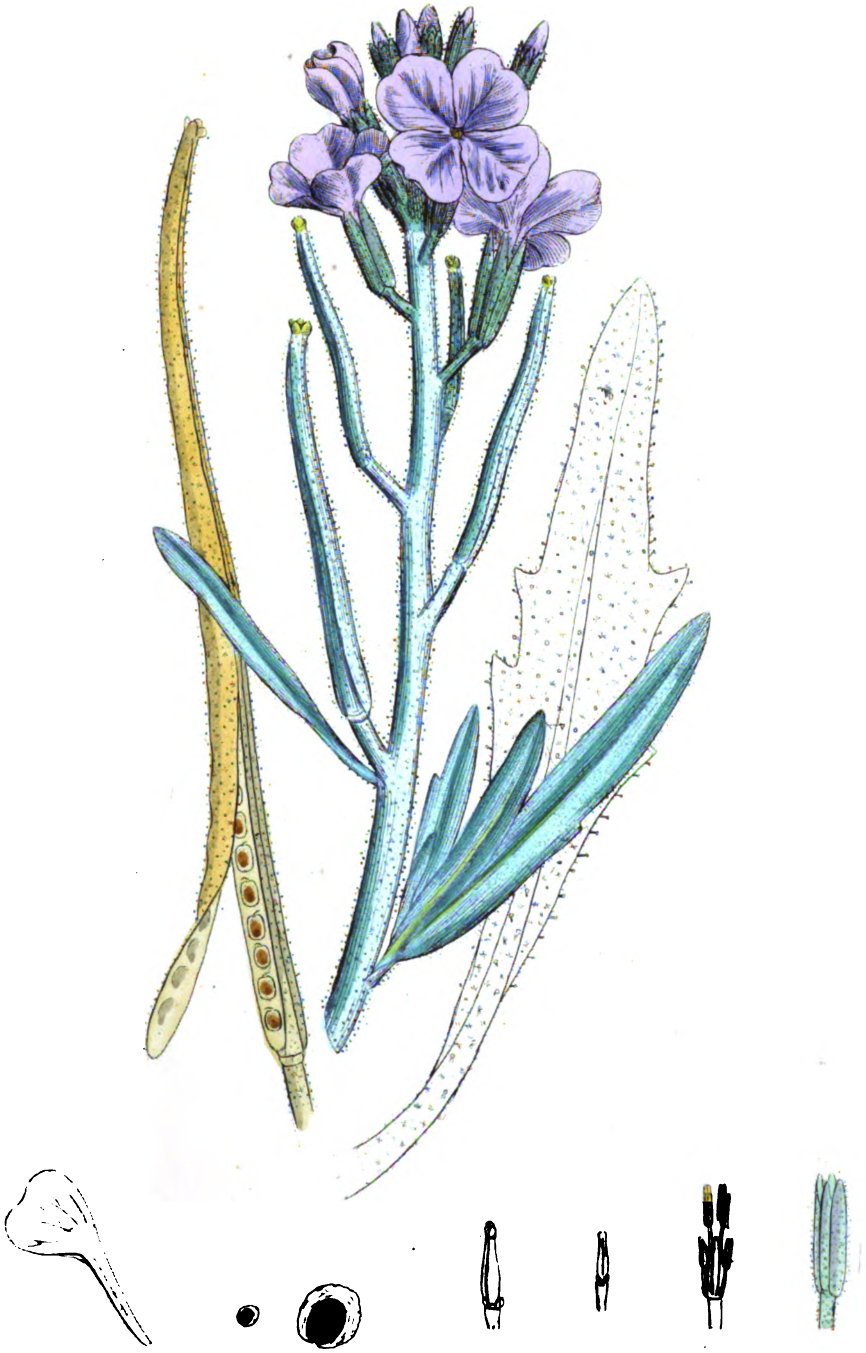
Erysimum Cheiranthoides. Treacle hedge-mustard.



E. B. 731.

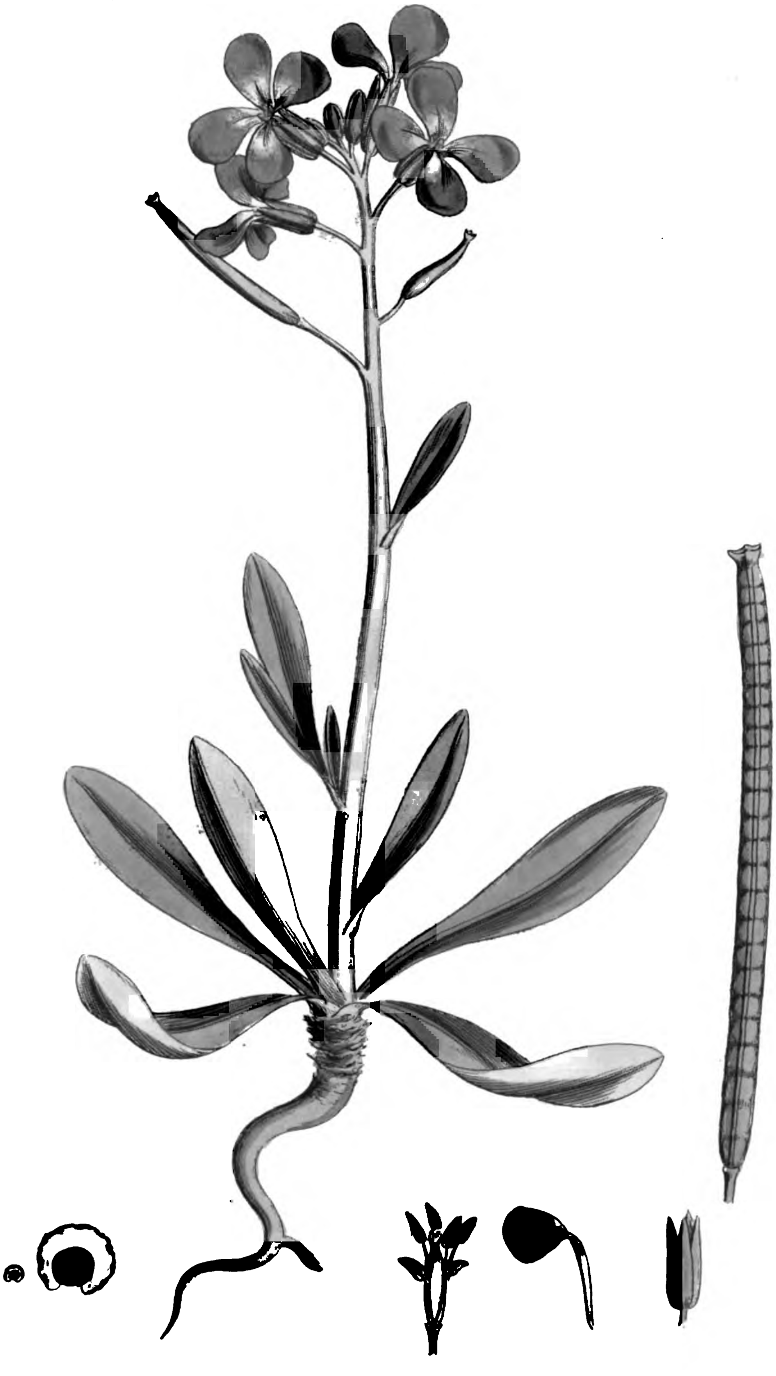
Hesperis matronalis. Dame's Rocket.

CIV.

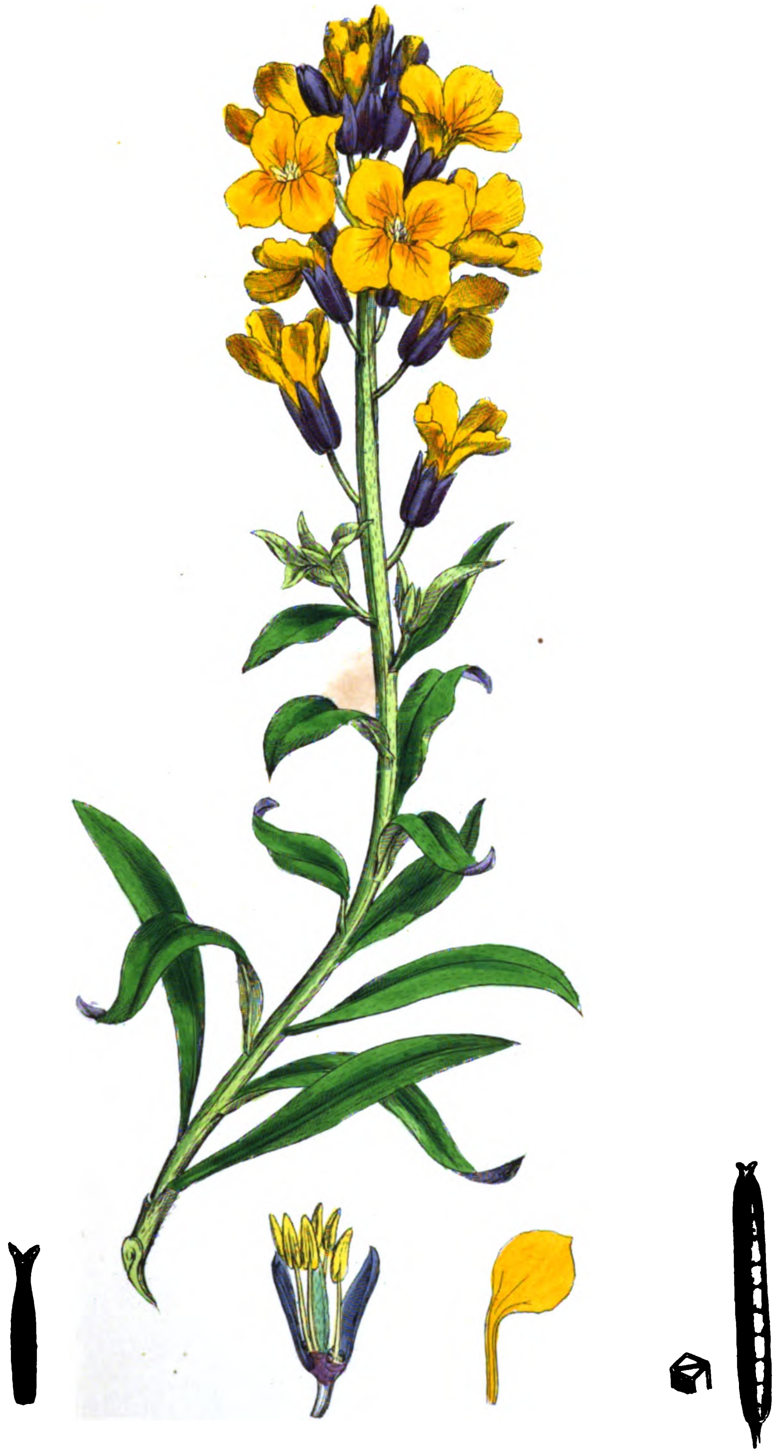


E. B. 462.

Matthiola sinuata. Sea Stock.

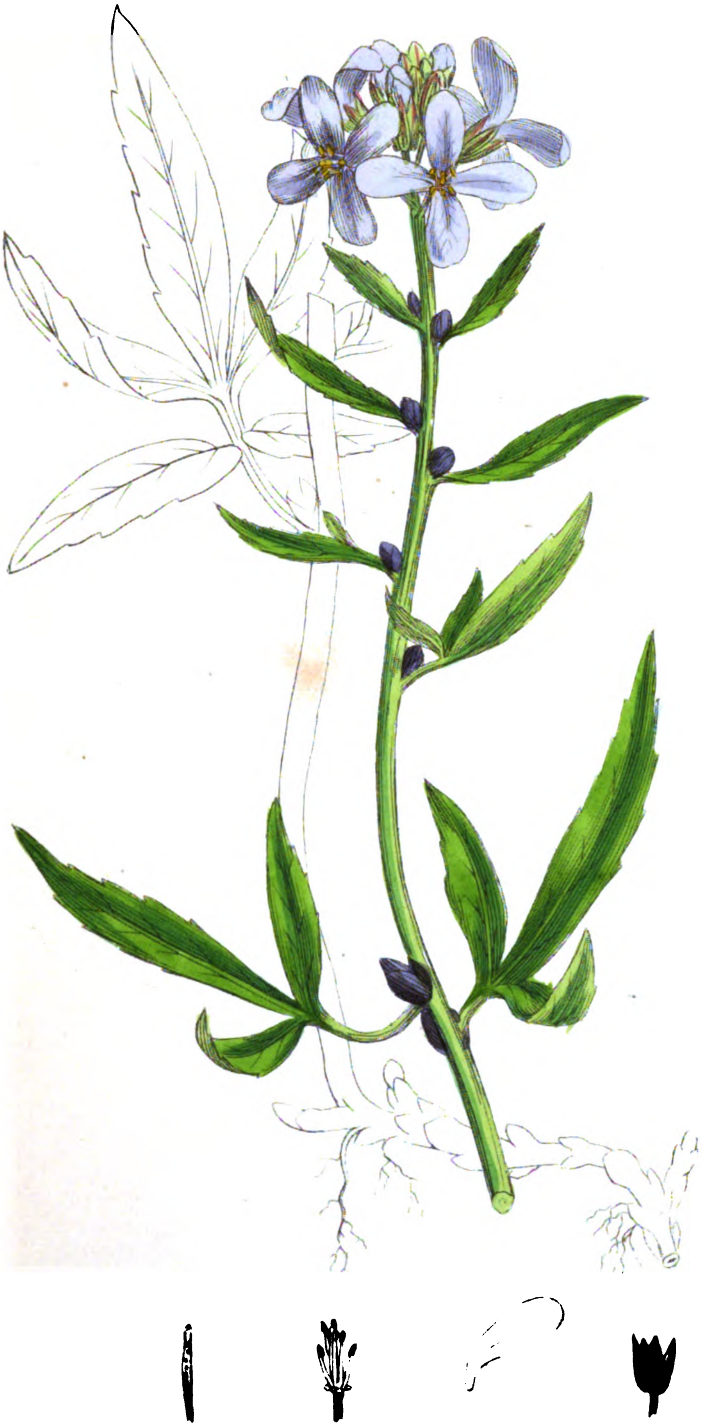


Matthiola incana. **Hoary Shrubby Stock.**



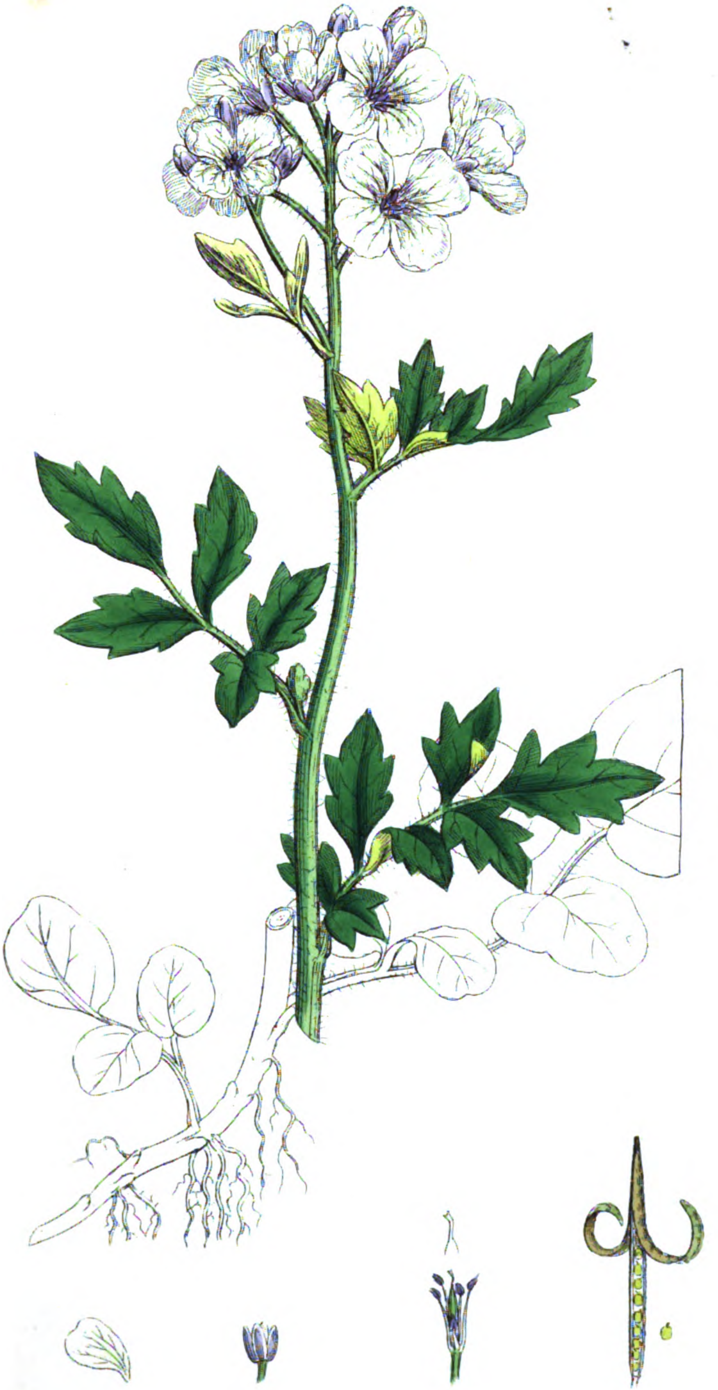
E. B. 1934.

Cheiranthus Cheiri. Wall-flower.



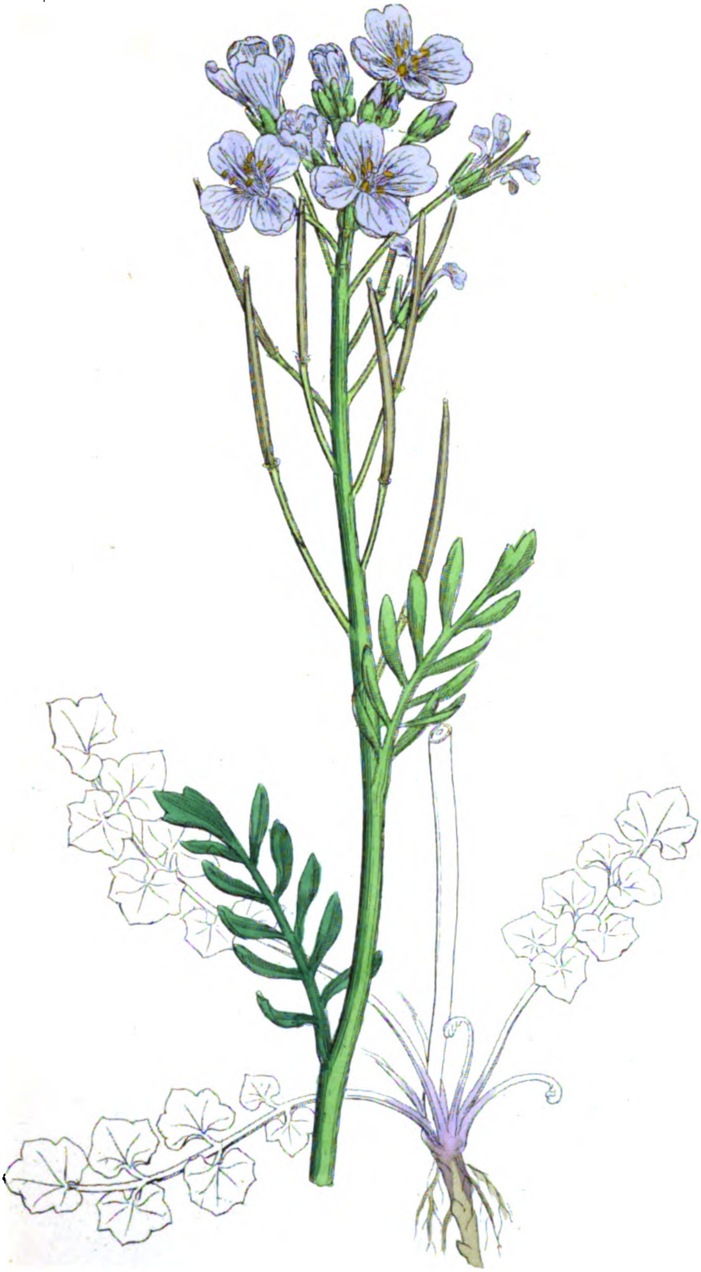
E. B. 309.

Cardamine bulbifera. Bulbiferous Coral-wort.



E. B. 1000.

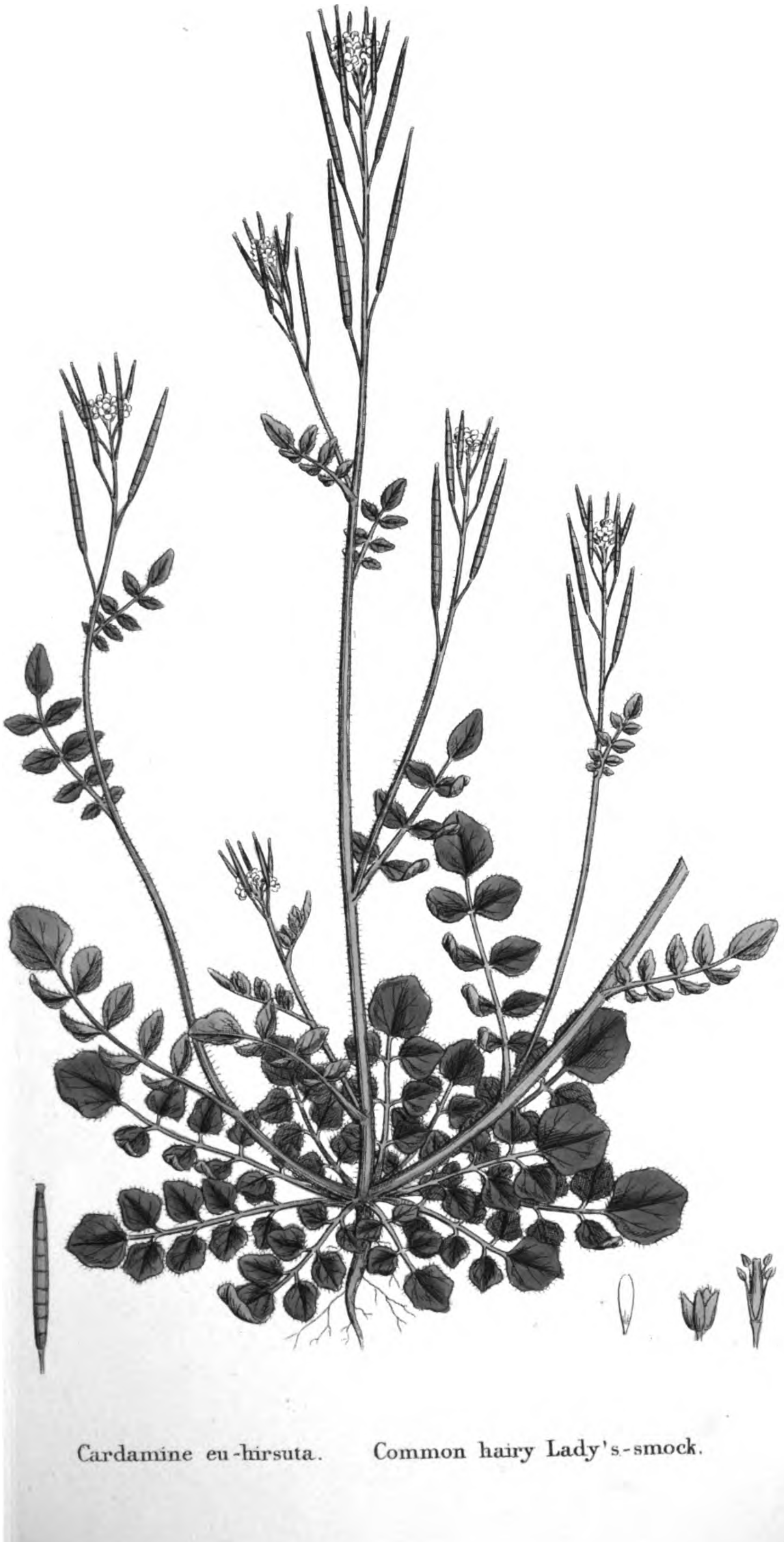
Cardamine amara. Bitter Lady's-smock.



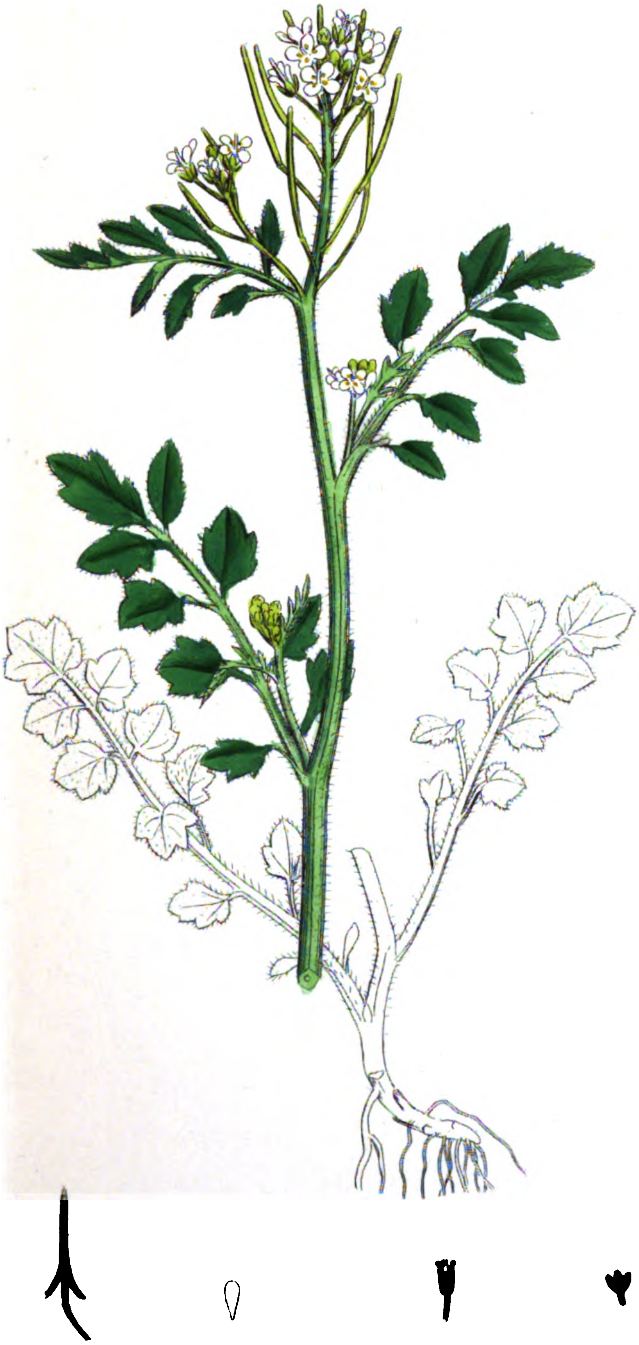
E. B. 776.

Cardamine pratensis. Meadow Lady's-smock.

CX.



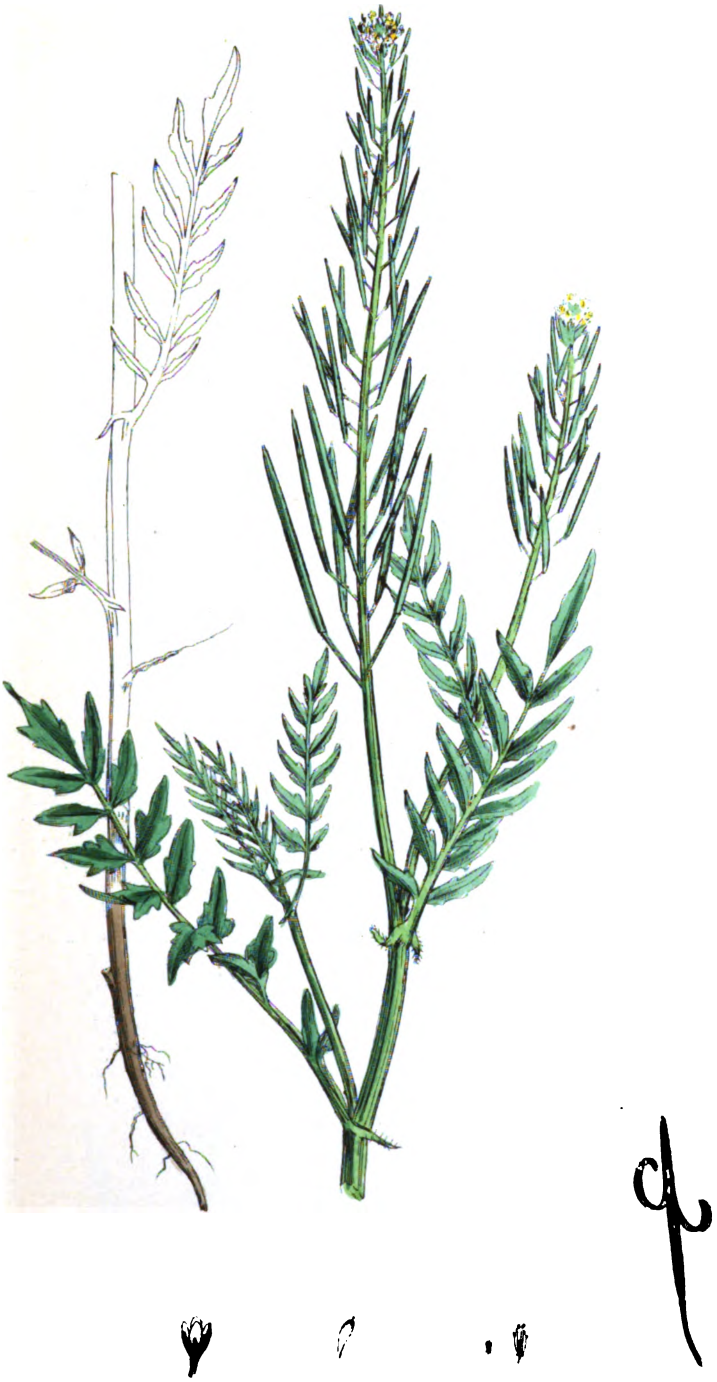
Cardamine eu-hirsuta. Common hairy Lady's-smock.



B. 492.

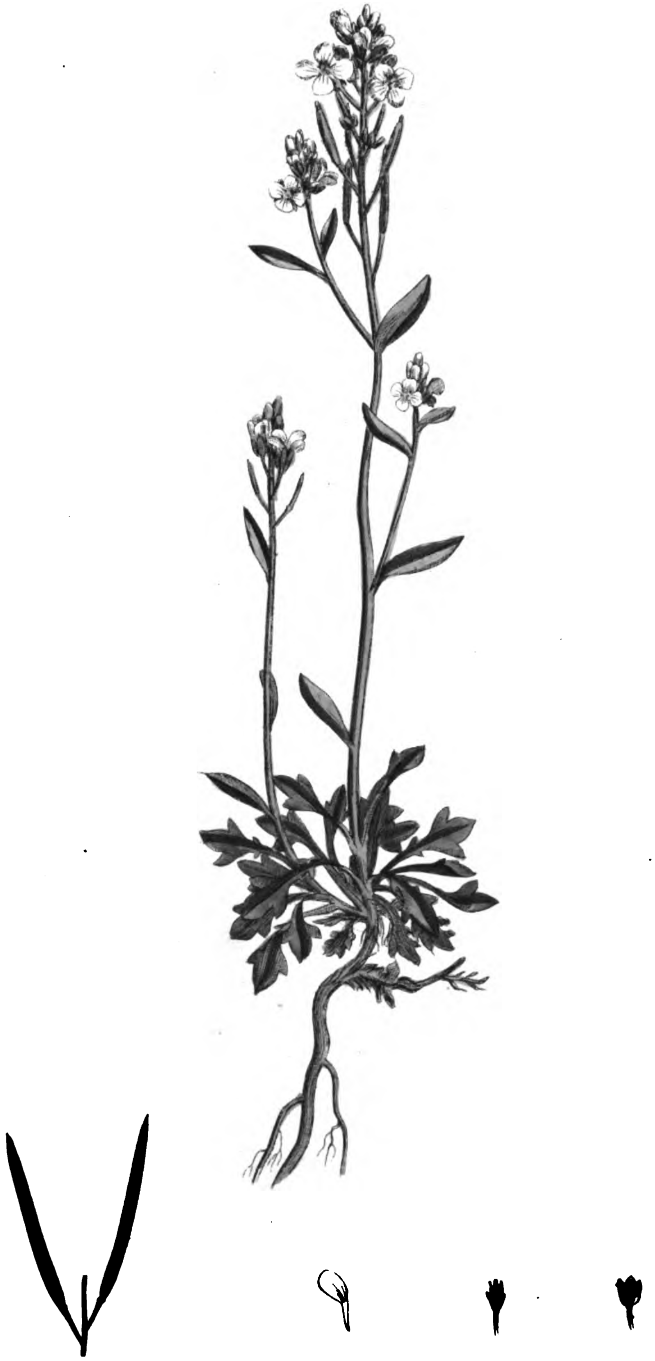
Cardamine sylvatica. Wood hairy Lady's-smock.

CXII.



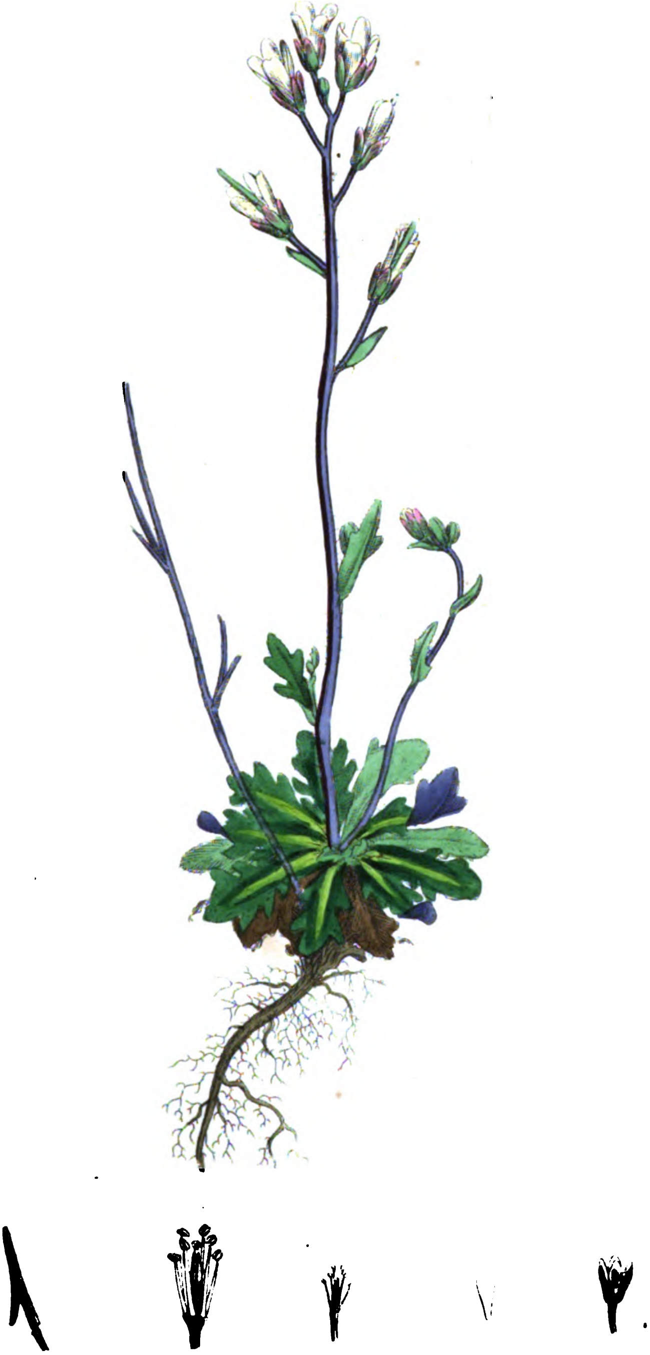
E. B. 80.

Cardamine impatiens. Impatient Lady's-smock.



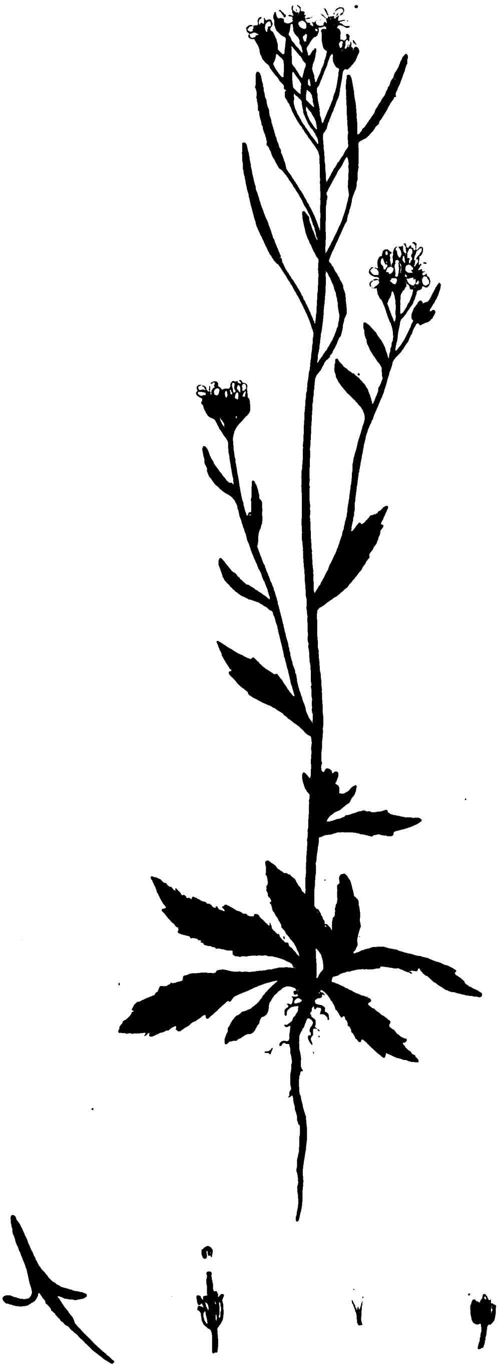
E. B. 469.

Arabis petræa. Alpine Rock-cress.



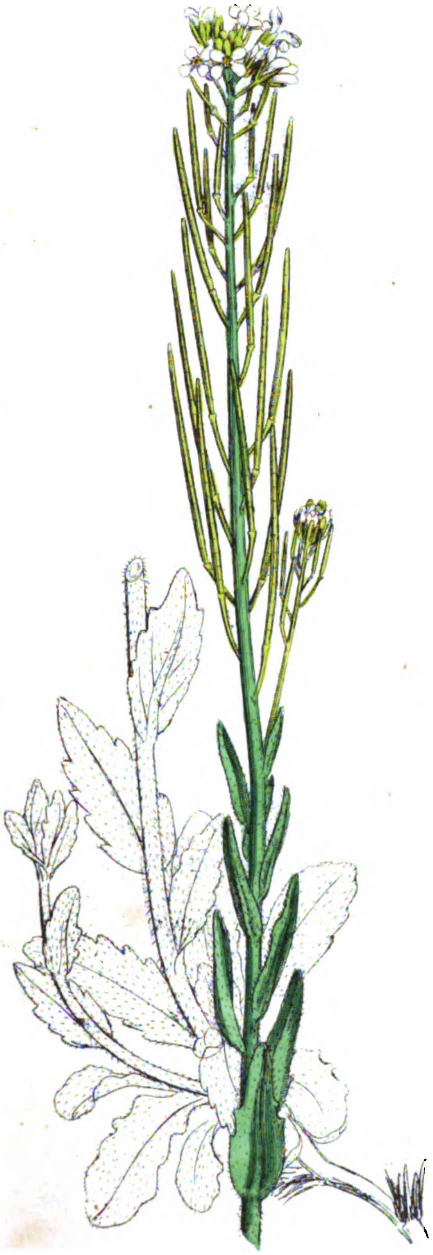
B. 614

Arabis stricta. Bristol Rock-cress.



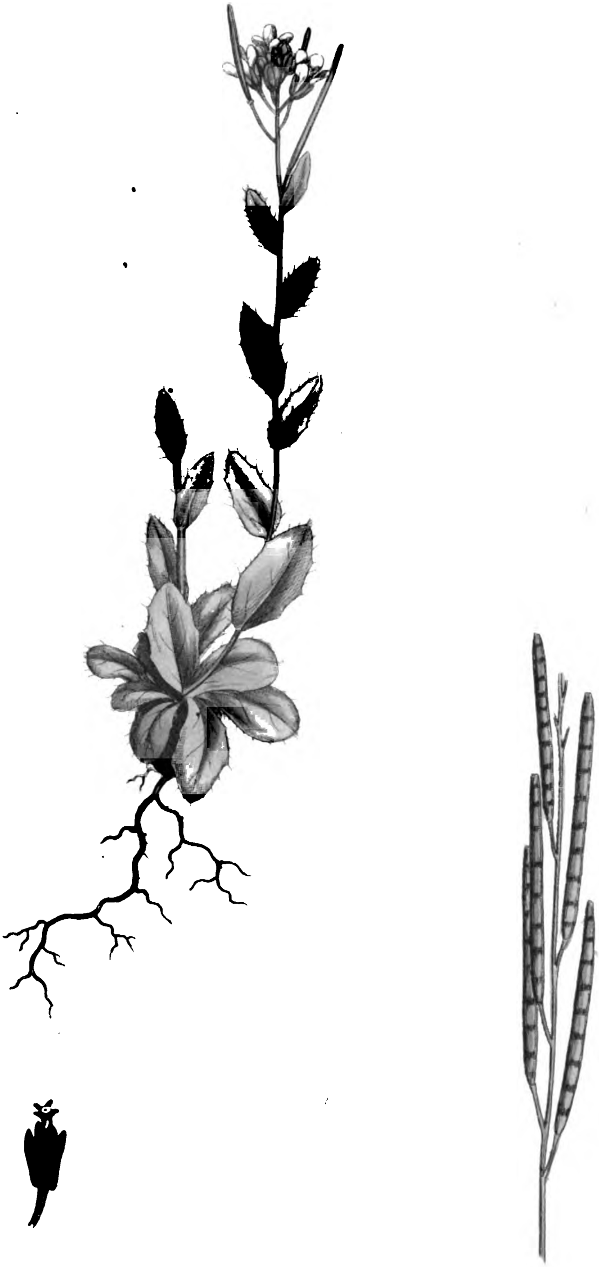
E. B. 901.

Arabis Thaliana. Thale-cress.



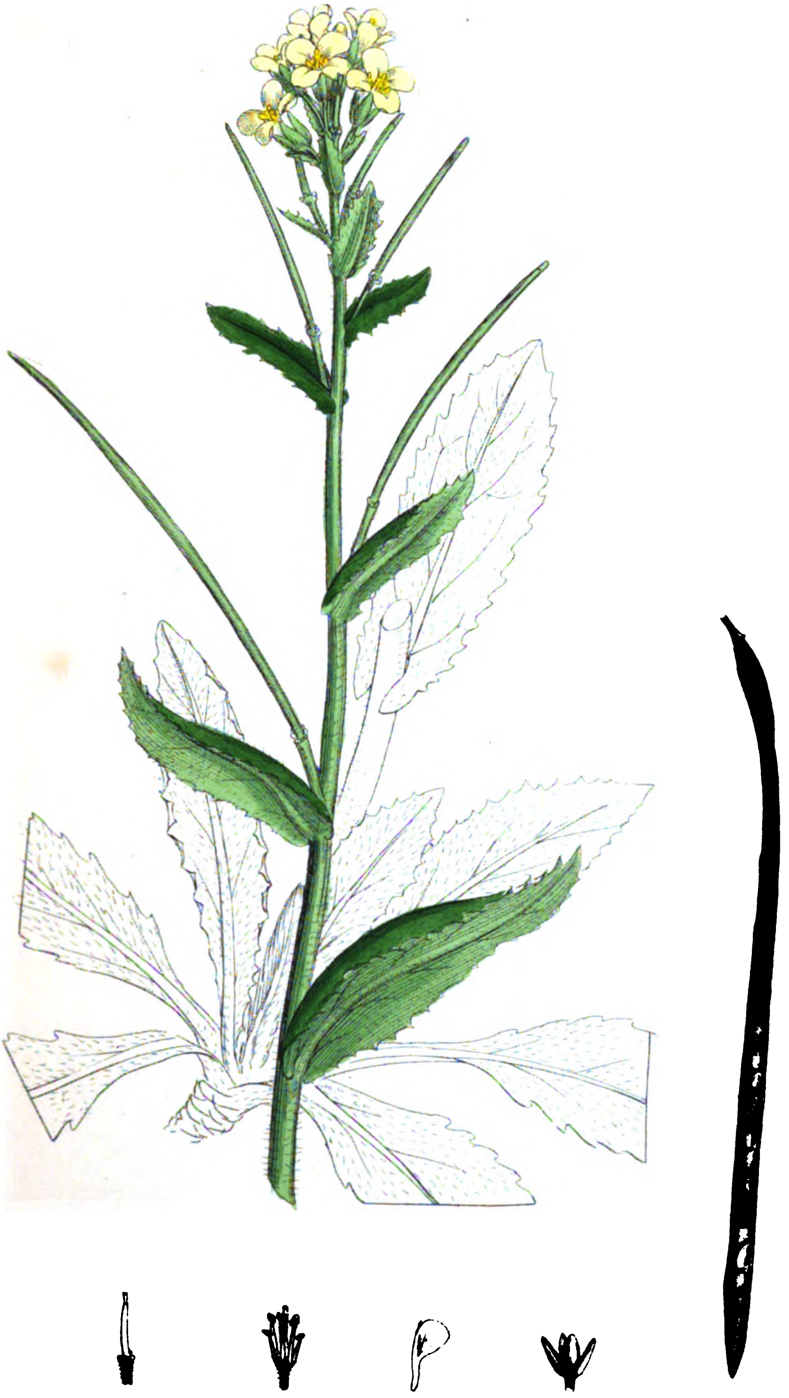
E. B. 587.

Arabis sagittata. Hairy Rock-cress.



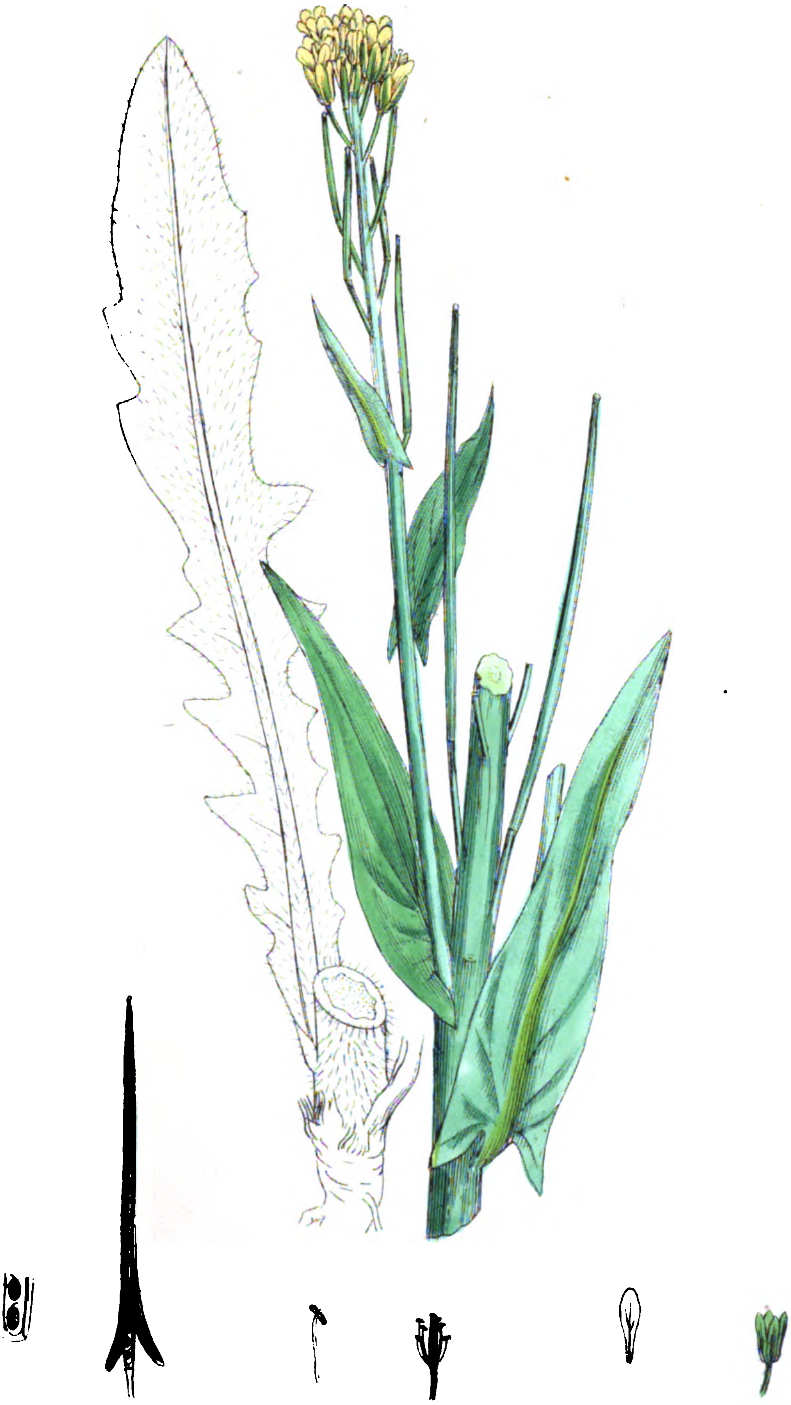
E. B. 1746.

Arabis ciliata.   Fringed Rock-cress.



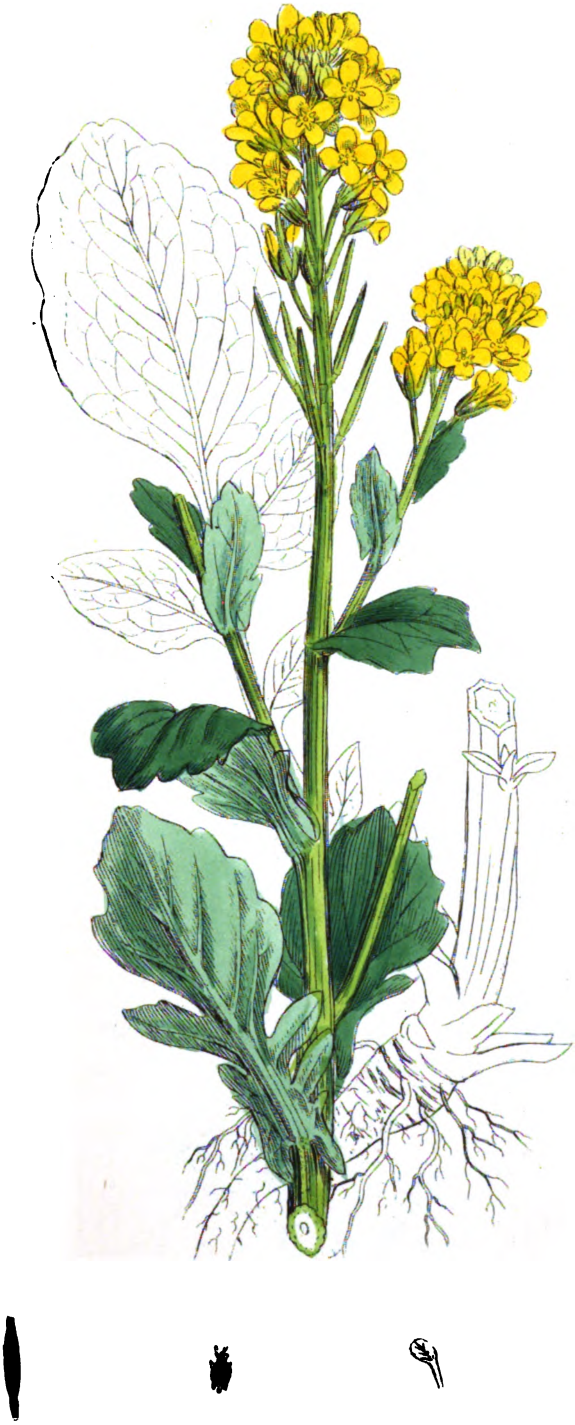
B. 178.

Arabis Turrita. Tower Wall-cress.



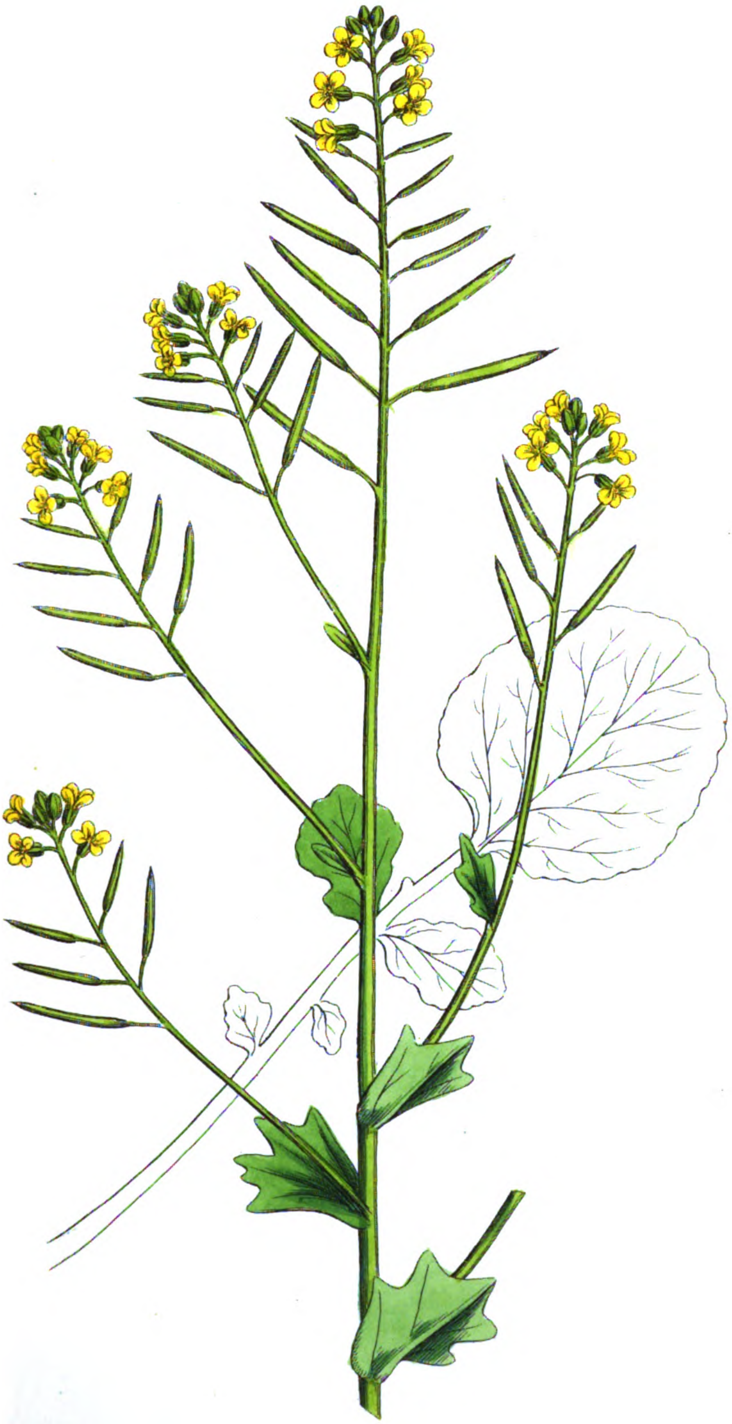
E. B. 777.

Arabis perfoliata. Smooth Tower-mustard.

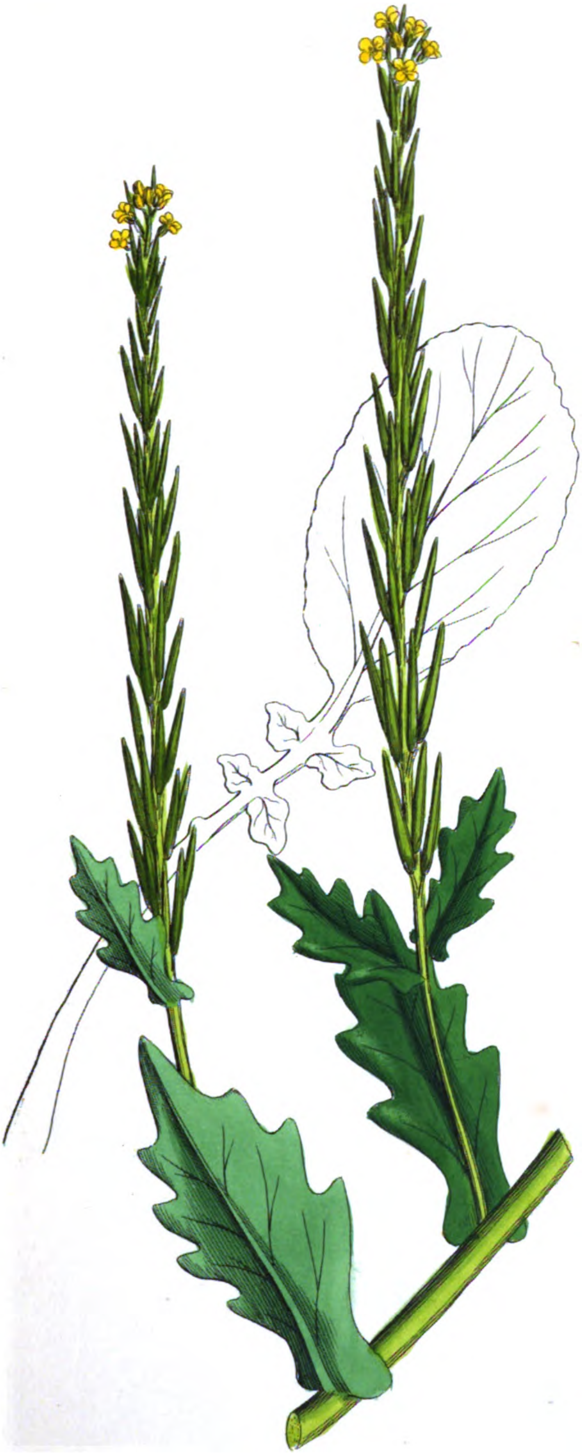


E. B. 443.

Barbarea vulgaris. Common Yellow-rocket.

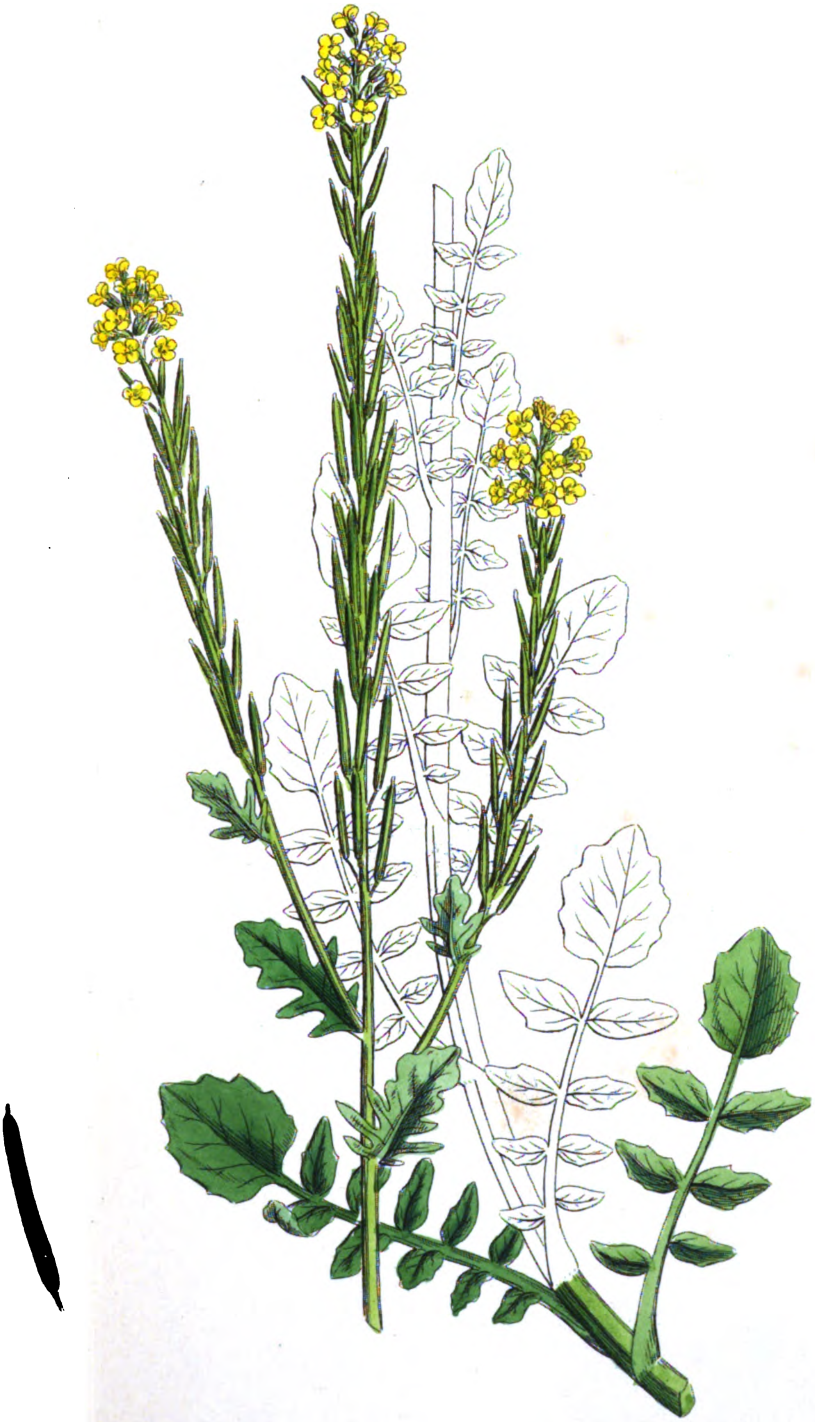


Barbarea arcuata. Reichenbach's Yellow-rocket.

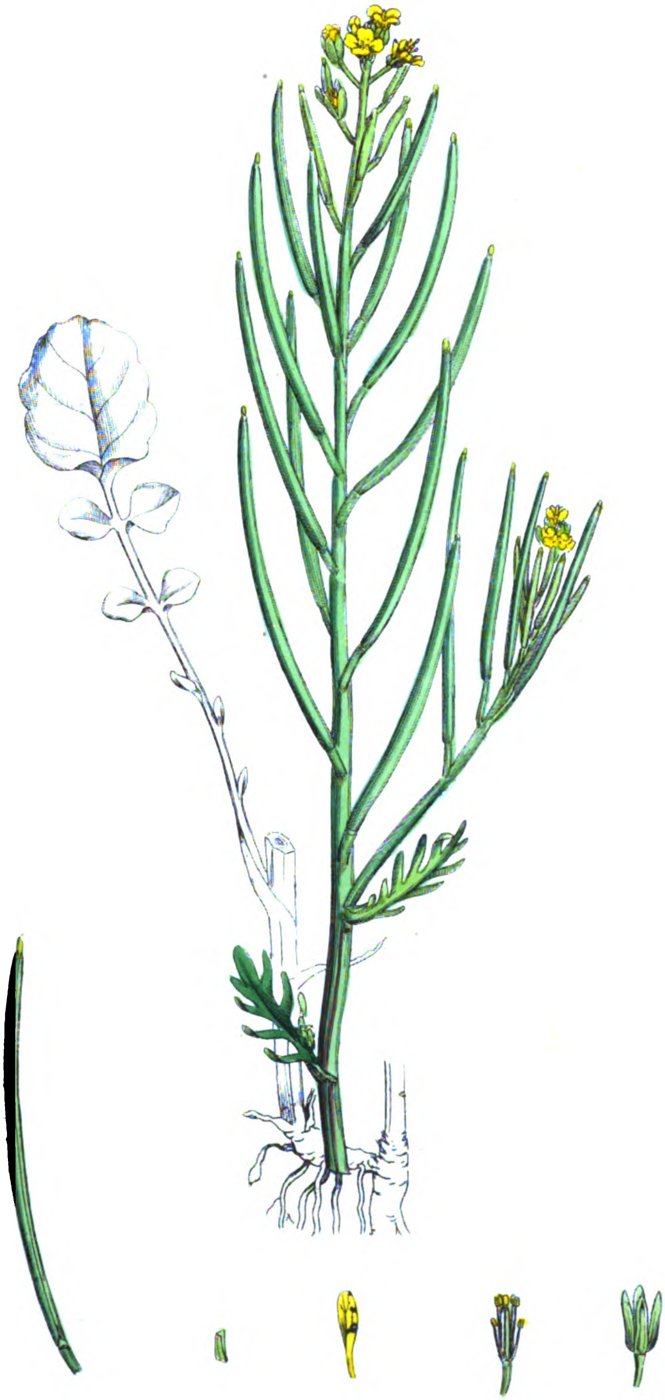


Barbarea stricta. **Small flowered Yellow-rocket.**

CXXIII.

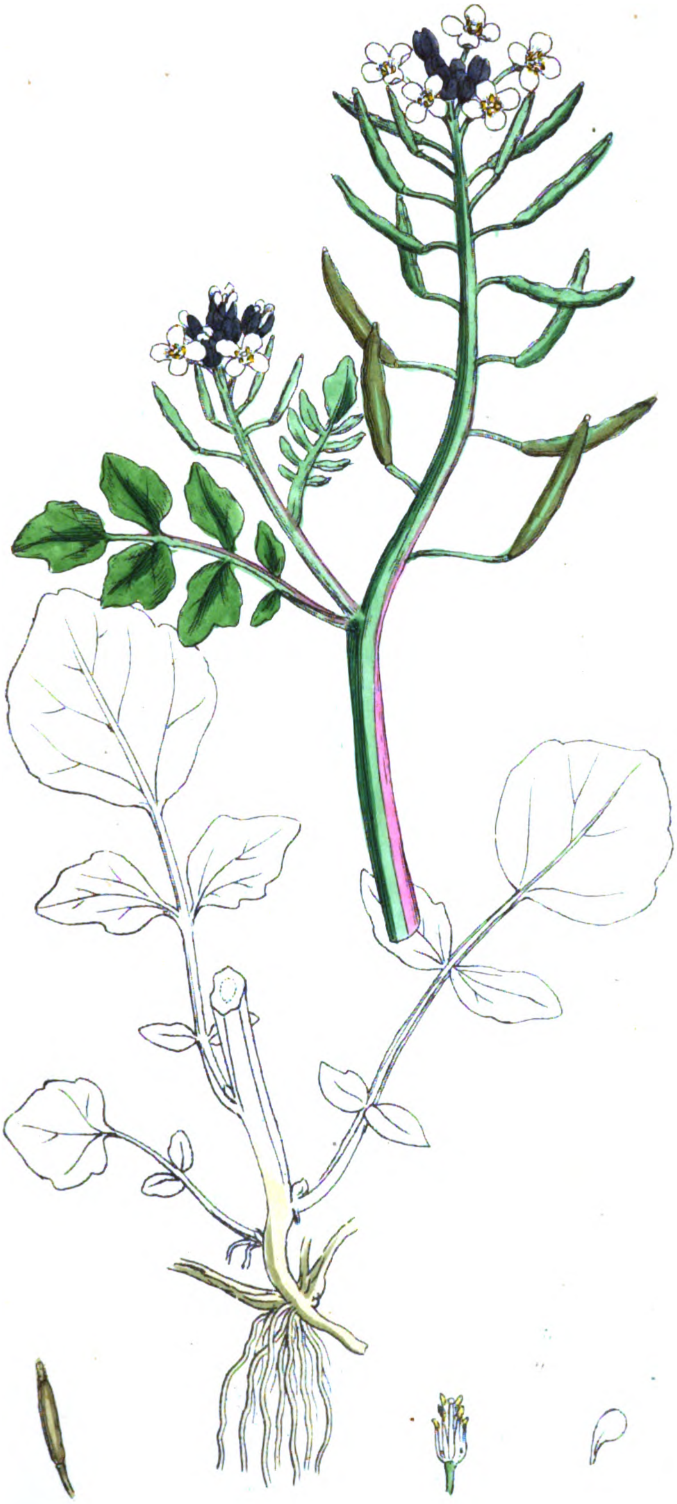


Barbarea intermedia. **Intermediate Yellow-rocket.**



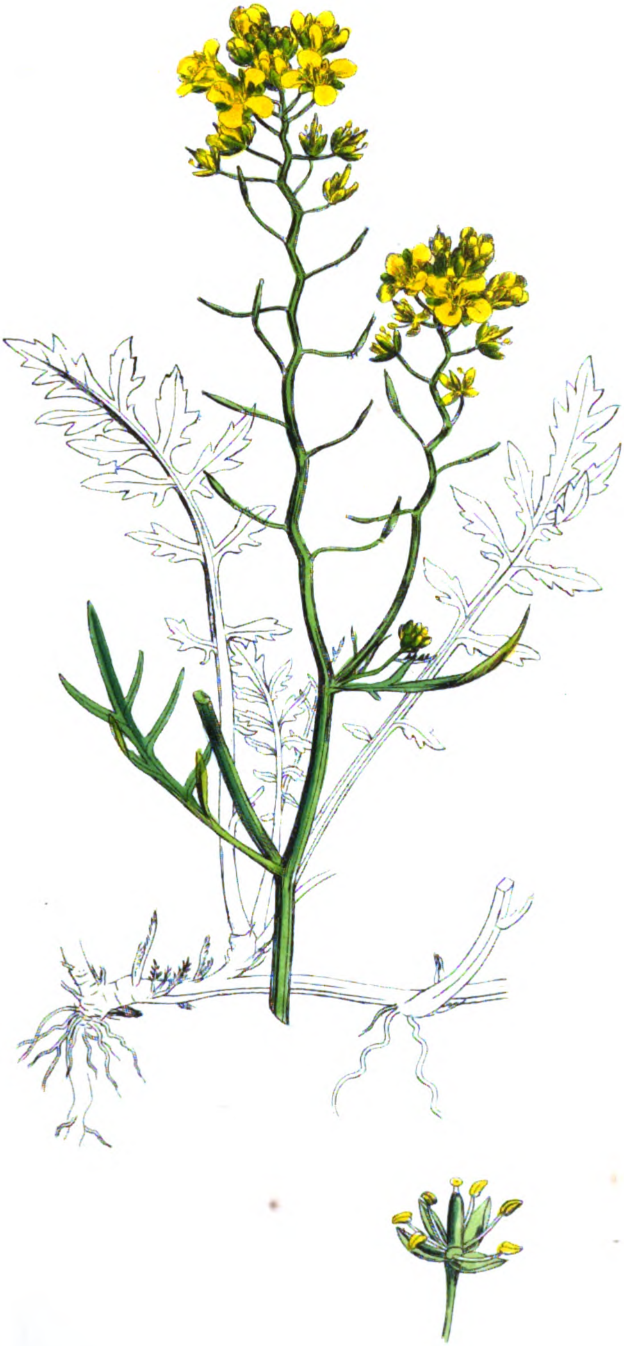
E. B. 1129.

Barbarea præcox. American Cress.



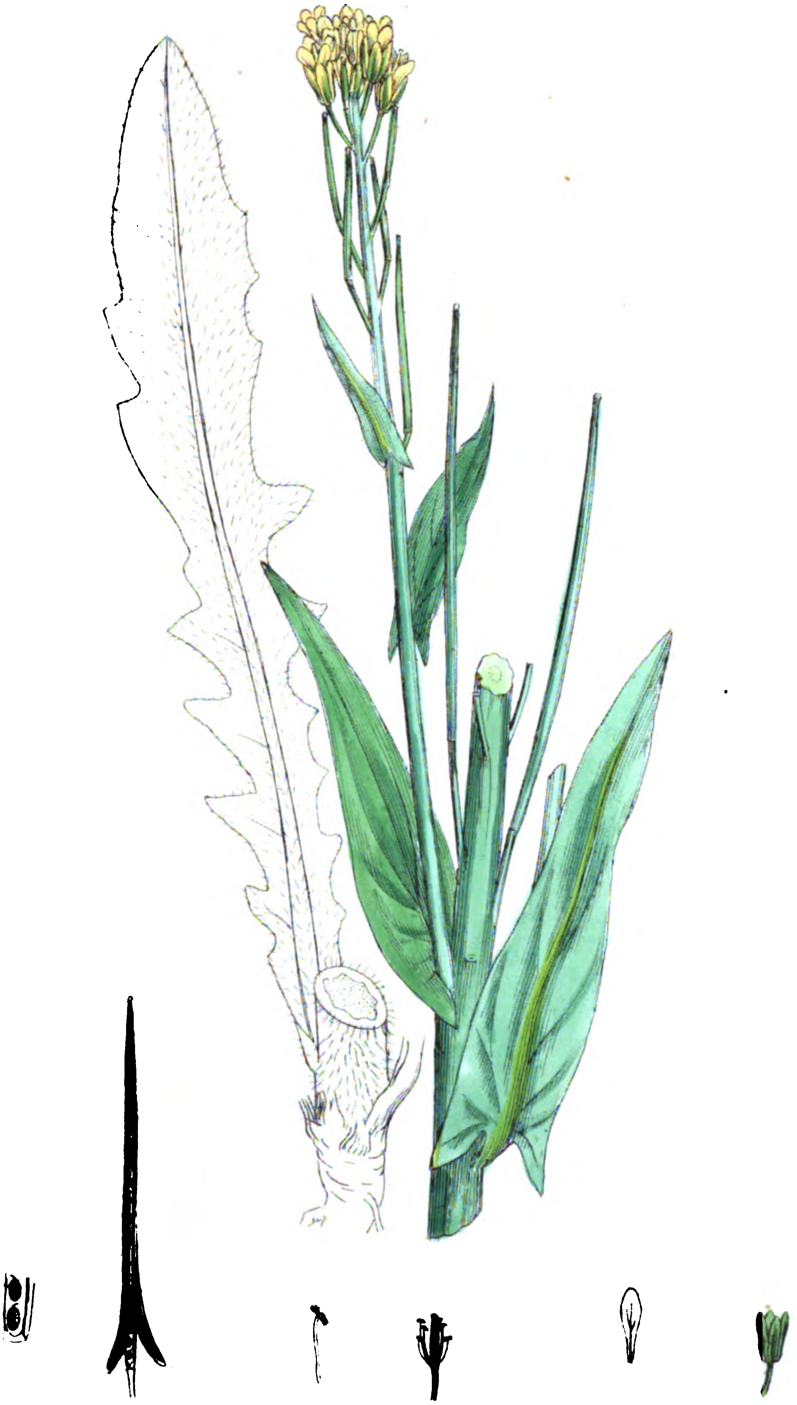
E. B. 855.

Nasturtium officinale. Water-cress.



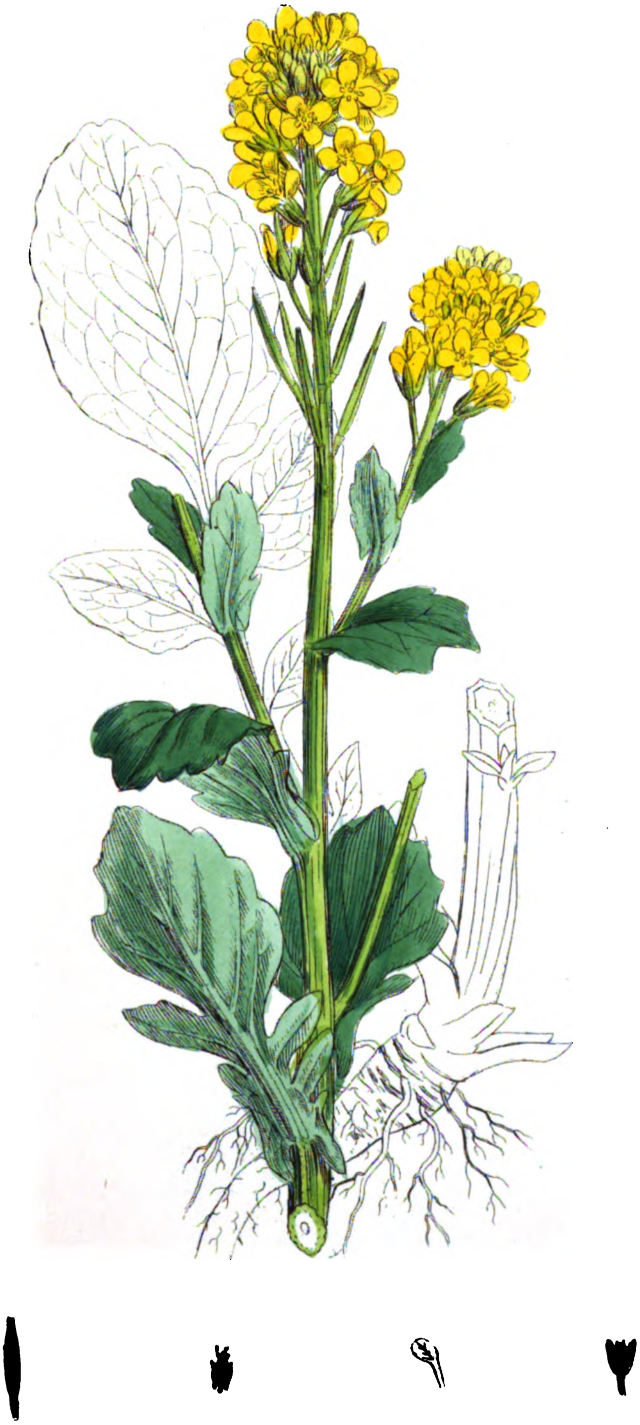
B. 2324

Nasturtium sylvestre. Creeping Yellow-cress.



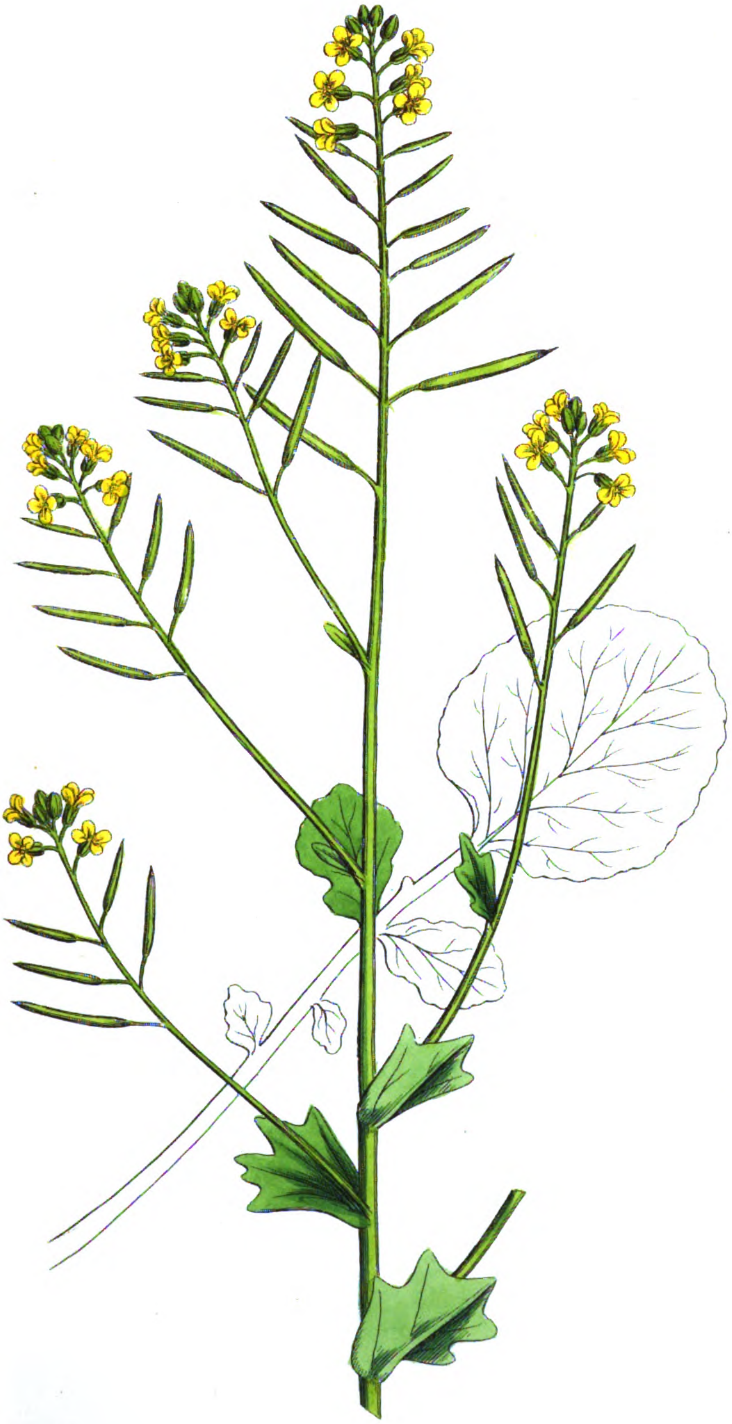
E. B. 777.

Arabis perfoliata.   Smooth Tower-mustard.

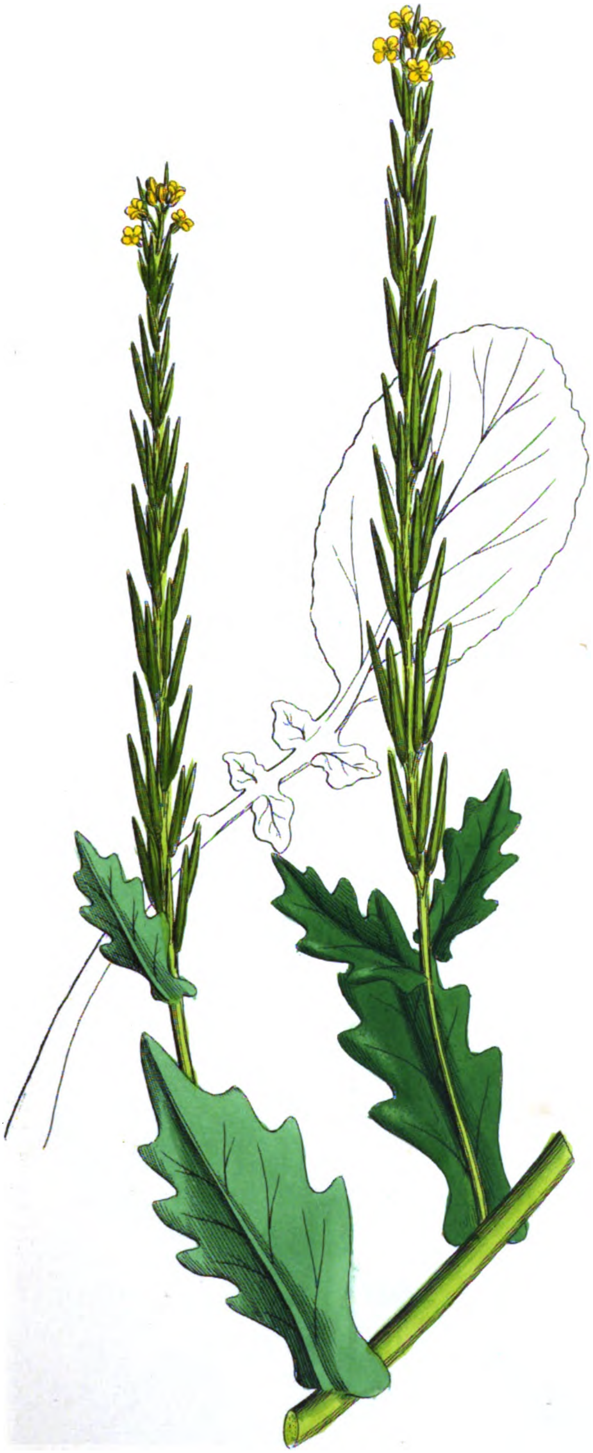


E. B. 443.

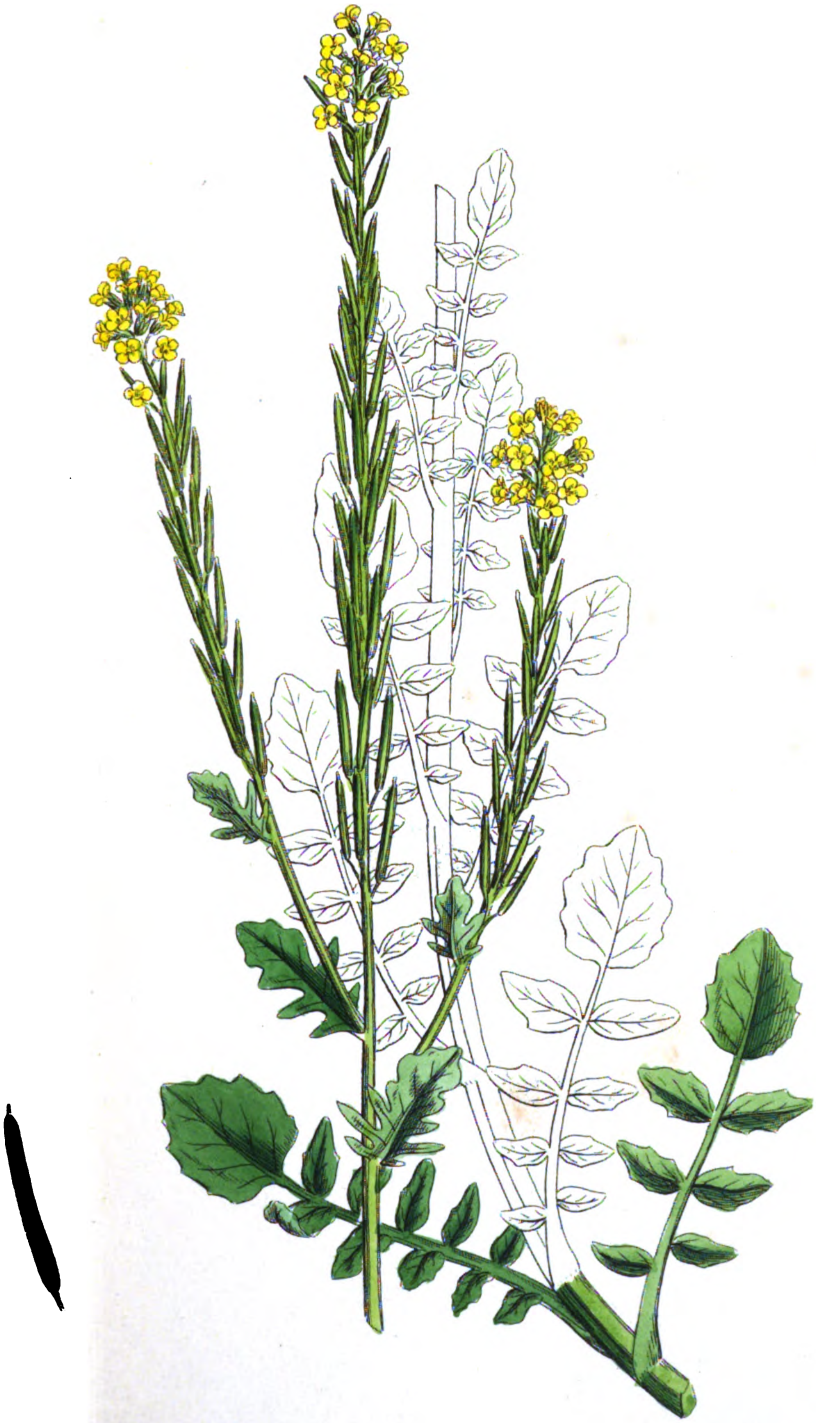
Barbarea vulgaris. Common Yellow-rocket.



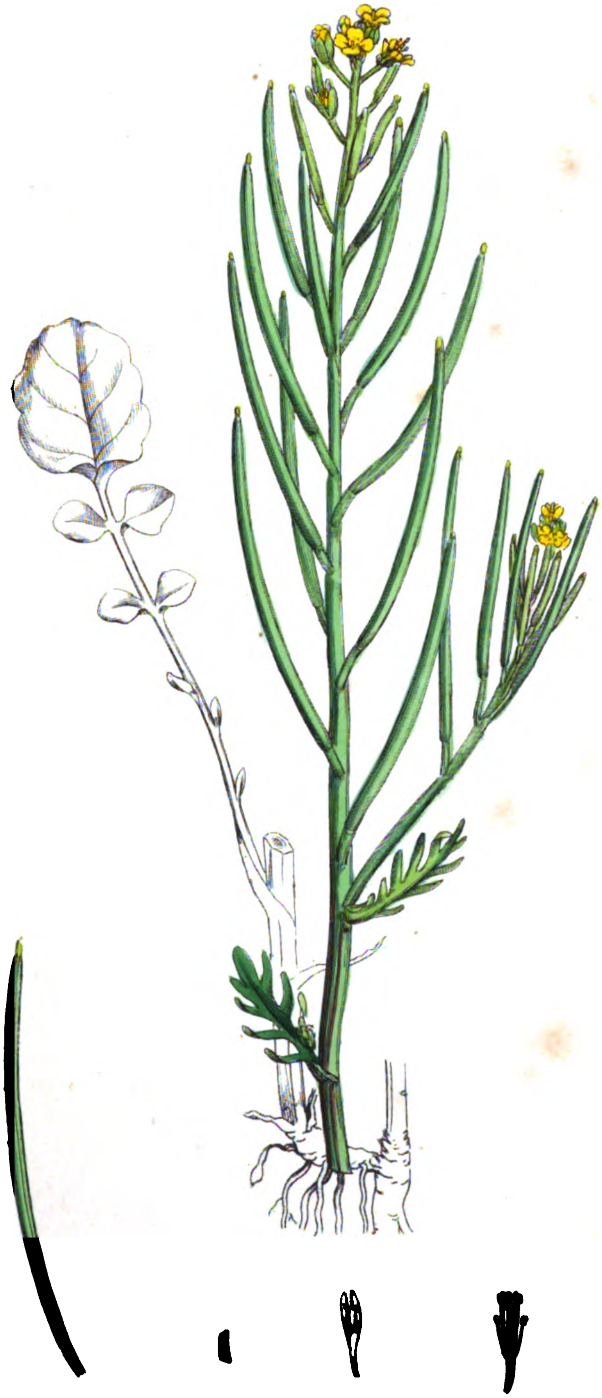
Barbarea arcuata. **Reichenbach's Yellow-rocket.**



Barbarea stricta. Small flowered Yellow-rocket.



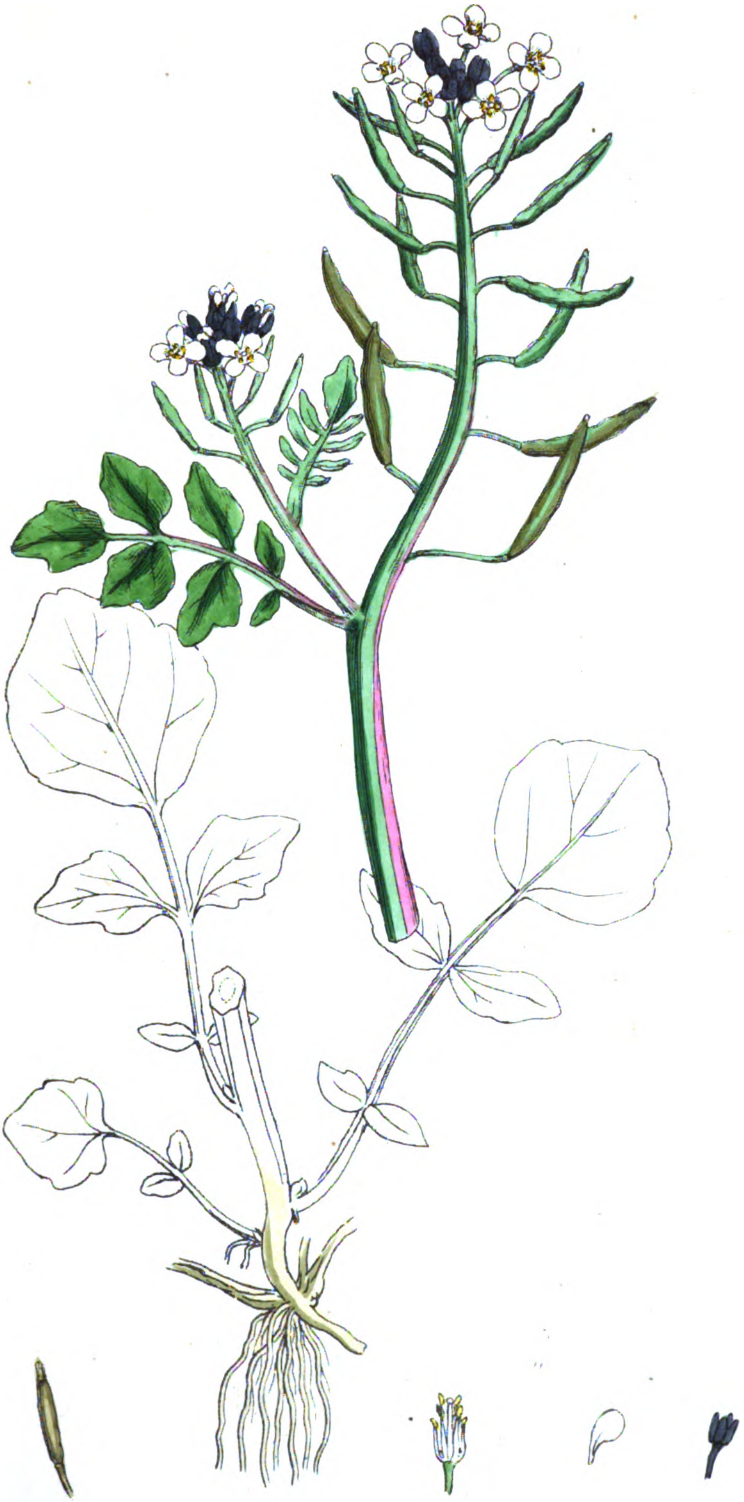
Barbarea intermedia. **Intermediate Yellow-rocket.**



E. B. 1129.

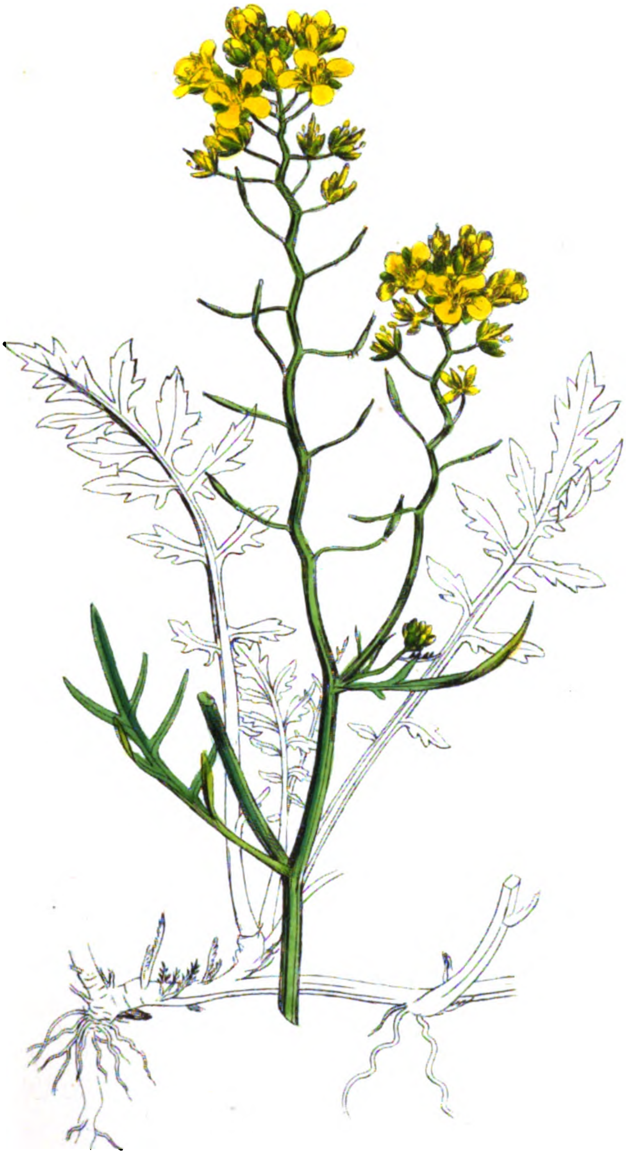
Barbarea præcox. American Cress.

CXXV.



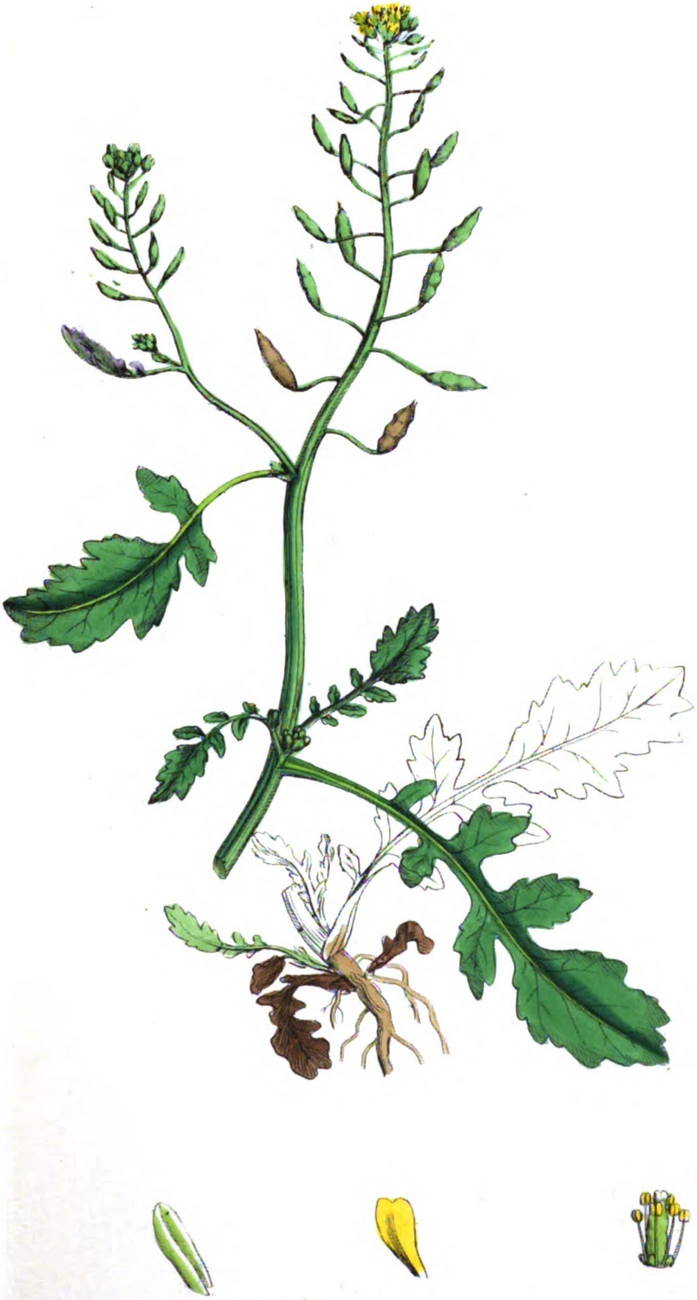
E. B. 855.

Nasturtium officinale. Water-cress.



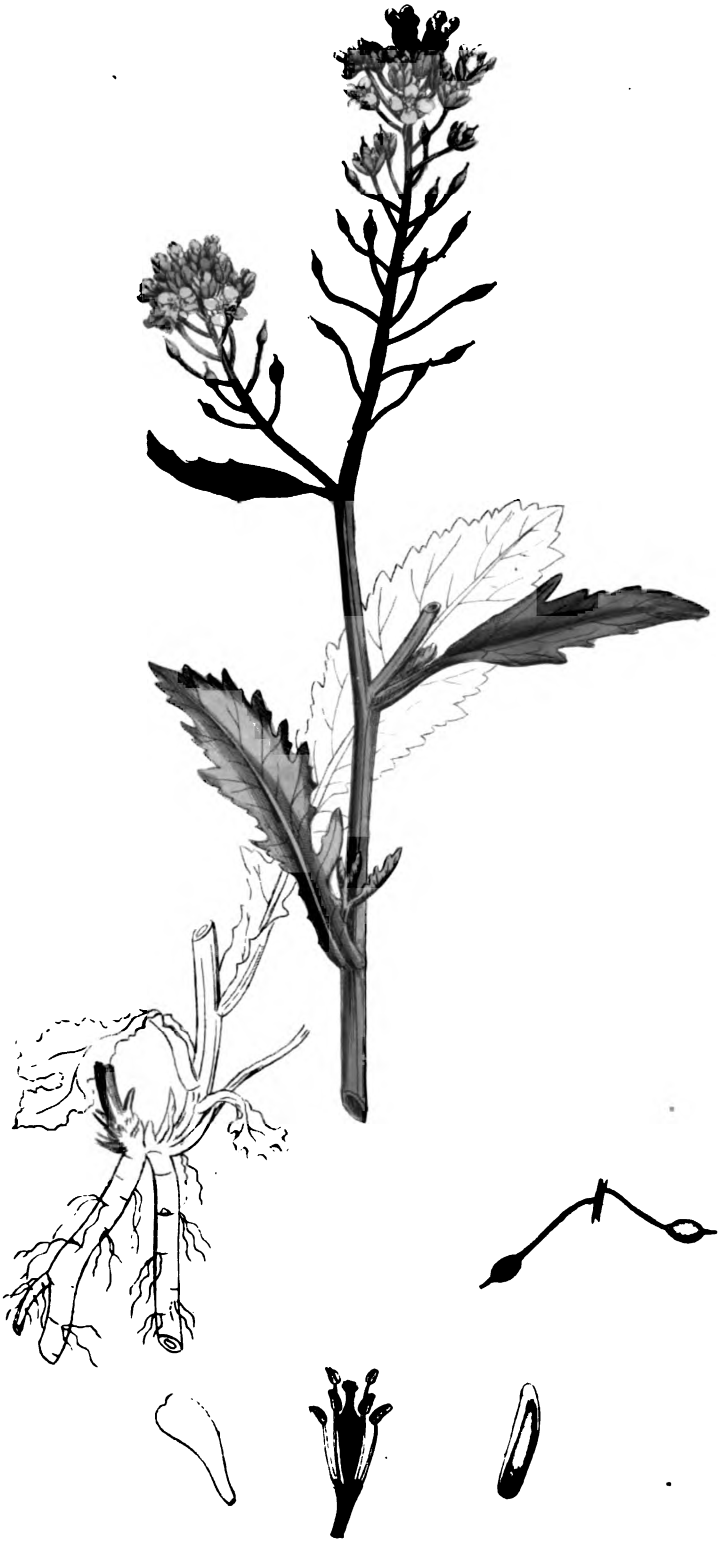
B. 2324.

Nasturtium sylvestre. **Creeping Yellow-cress.**



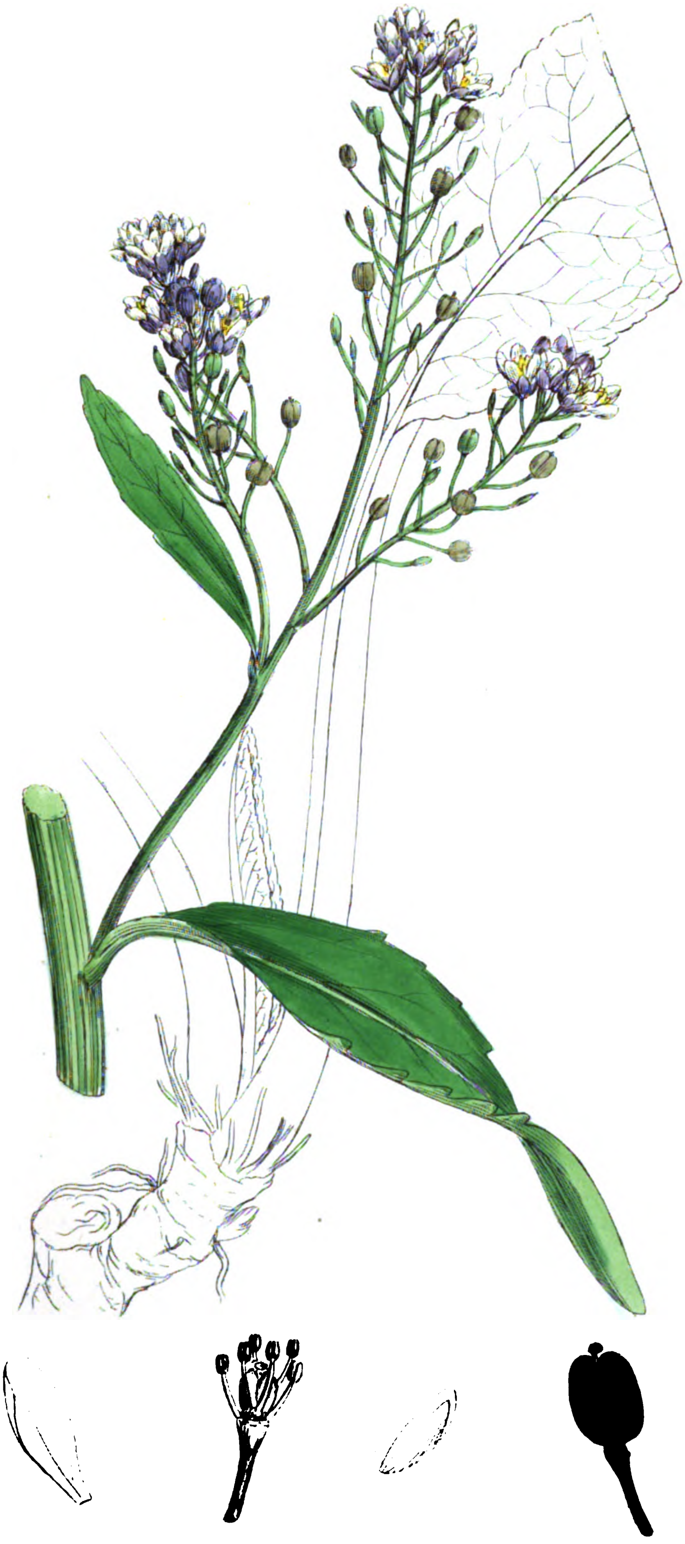
E. B. 1747.

Nasturtium palustre. Marsh Yellow-cress.



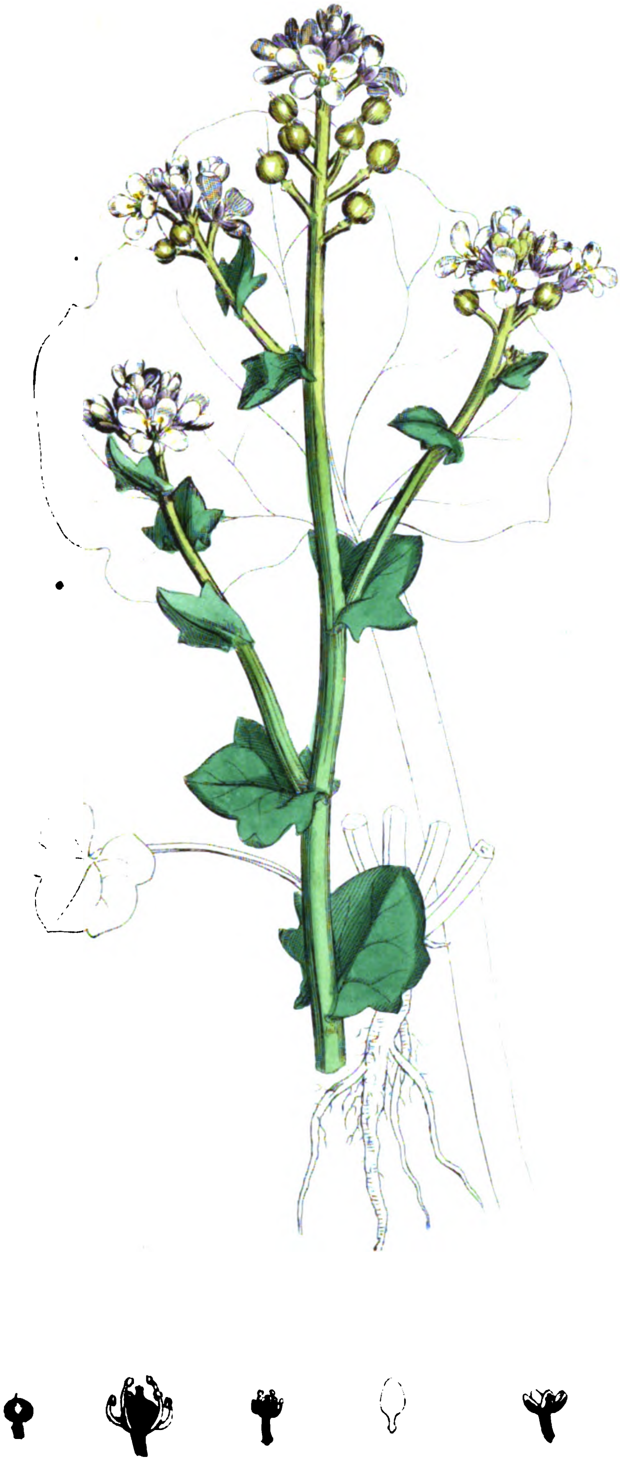
E. B. 1840.

Nasturtium amphibium. **Great Yellow-cress.**



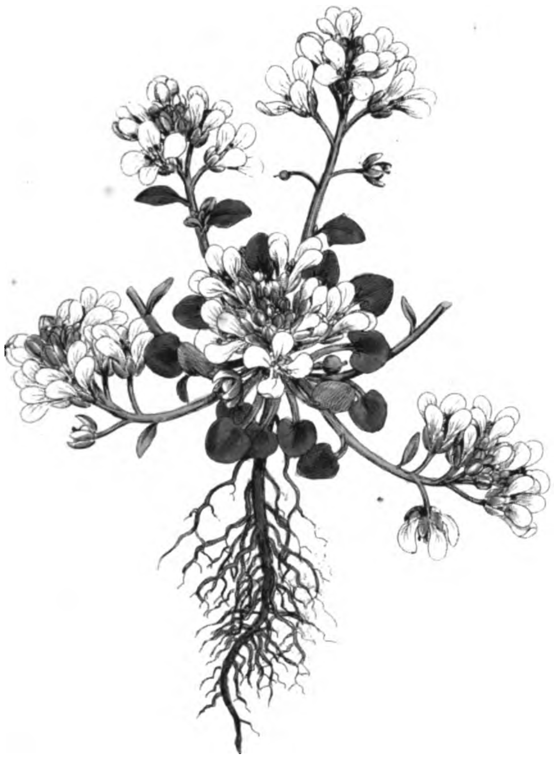
E. B. 2323.

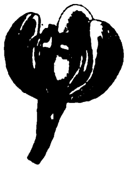
Cochlearia Armoracia. Horse-Radish.

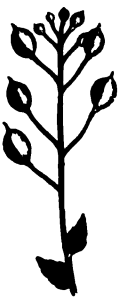


E. B. 551.

Cochlearia officinalis. Common Scurvy-grass.

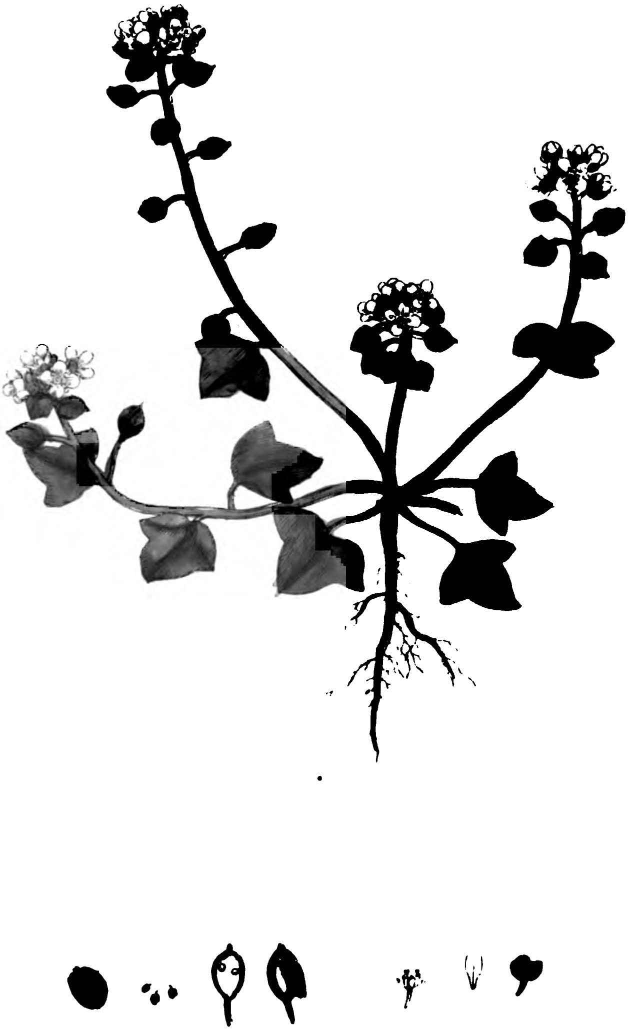






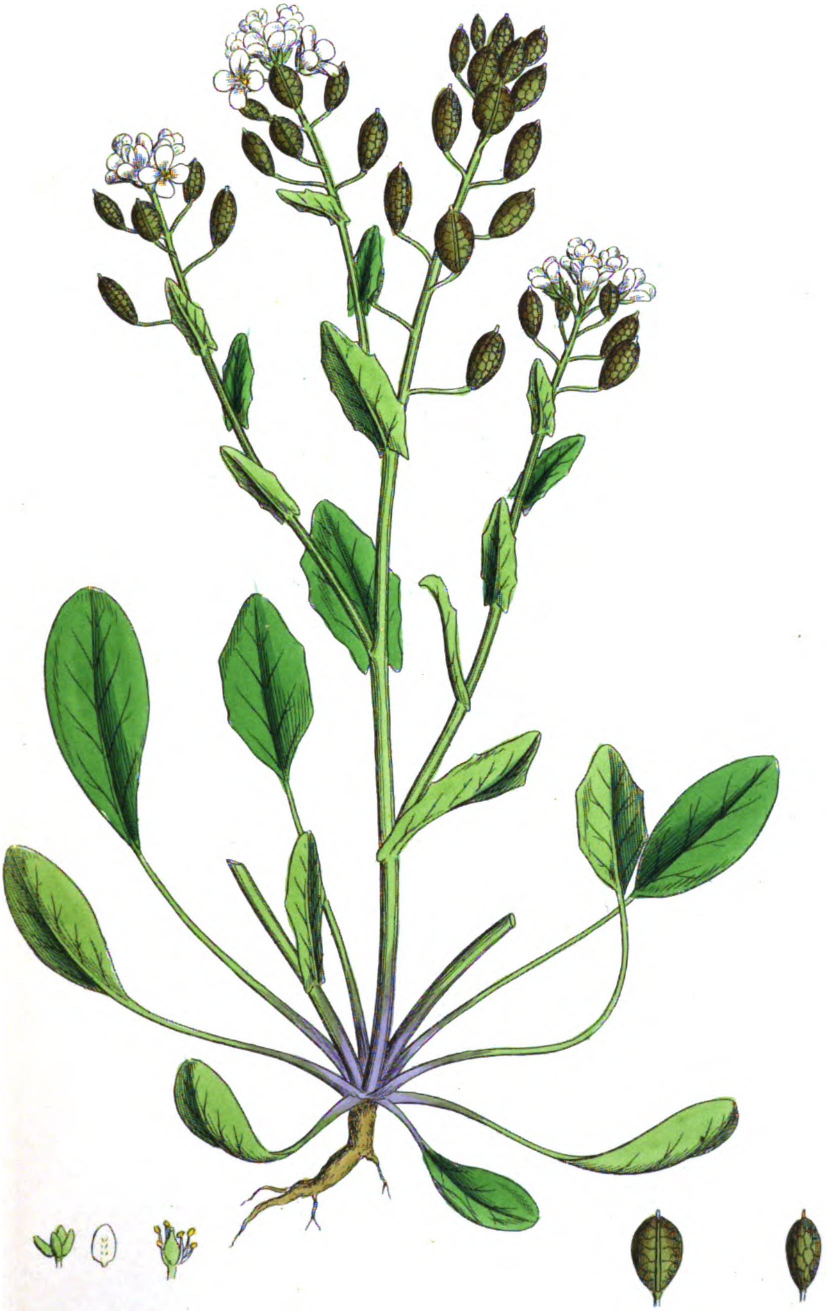
2403.

Cochlearia alpina. Mountain Scurvy-grass.

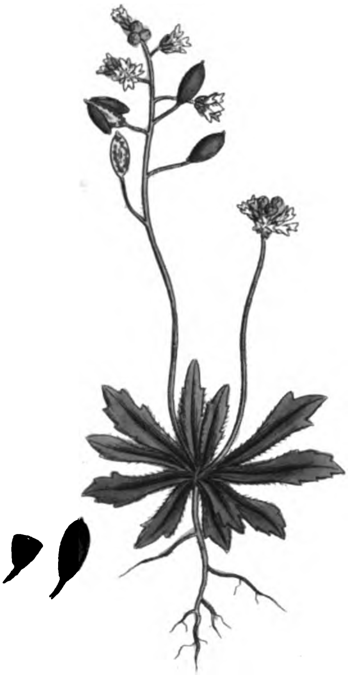


E. B. 696.

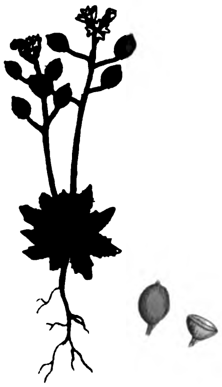
Cochlearia danica. Hastate-leaved Scurvy-grass.



Cochlearia anglica. Long-leaved Scurvy-grass.



1.



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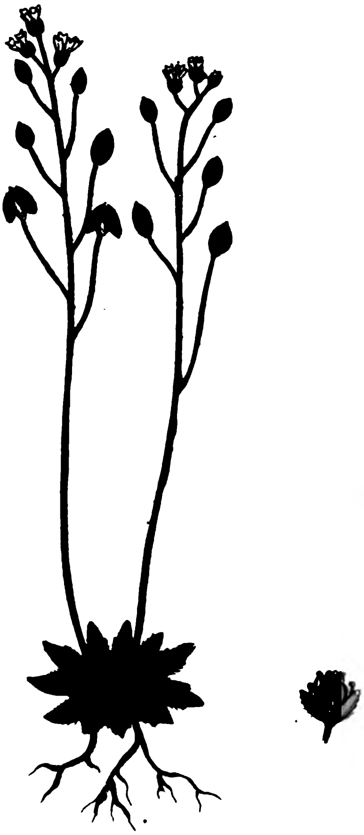
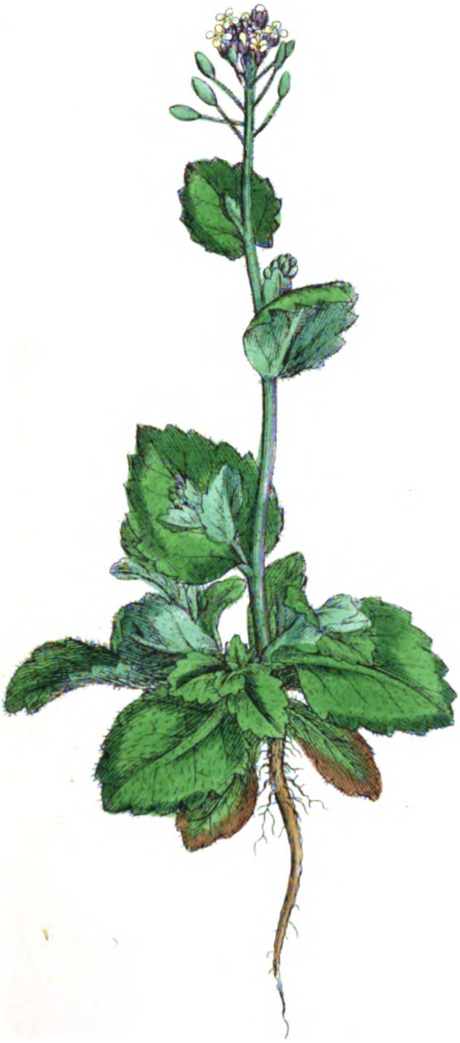


3.

Draba verna. **Common Whitlow-grass.**

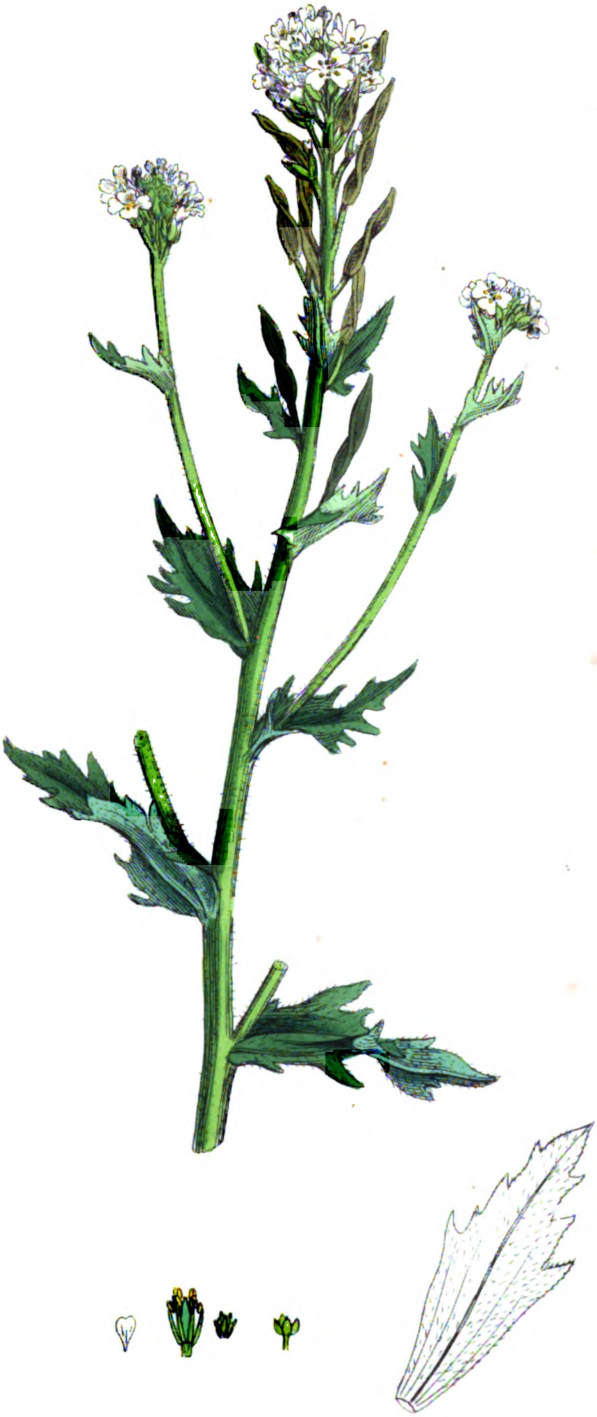
1. **Draba-eu-verna.** 2. **Draba brachycarpa.** 3. **Draba inflata.**



B. 912.

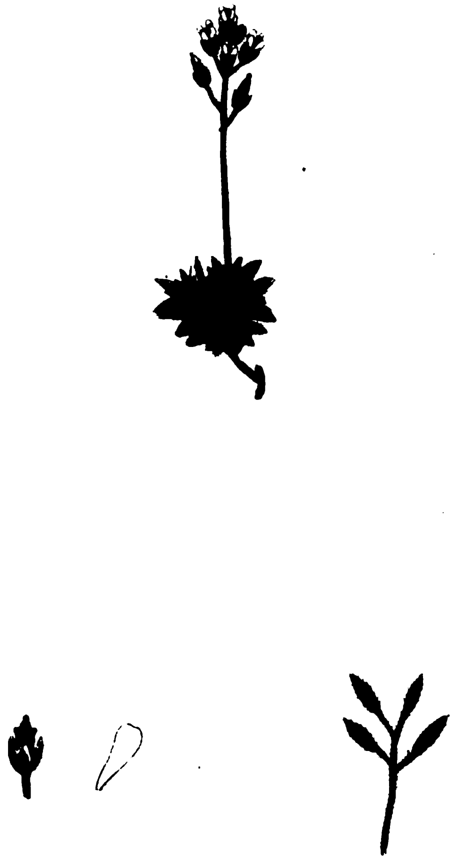
Draba muralis. **Speedwell-leaved Whitlow-grass.**

E. B. 388.



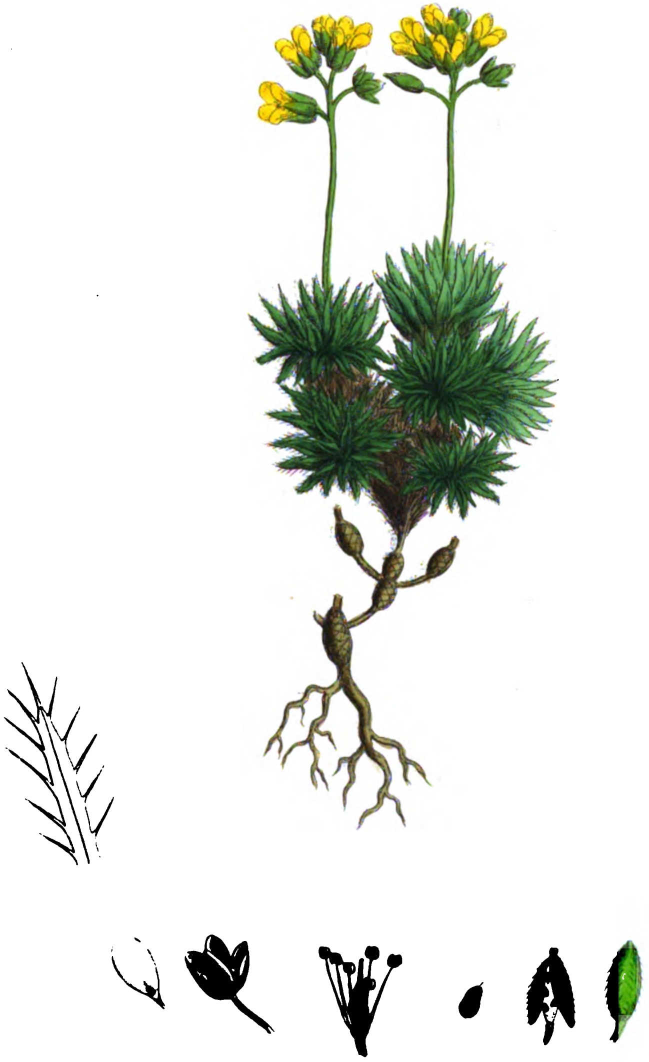
Draba incana. Twisted-podded Whitlow-grass.

CXXXVII.



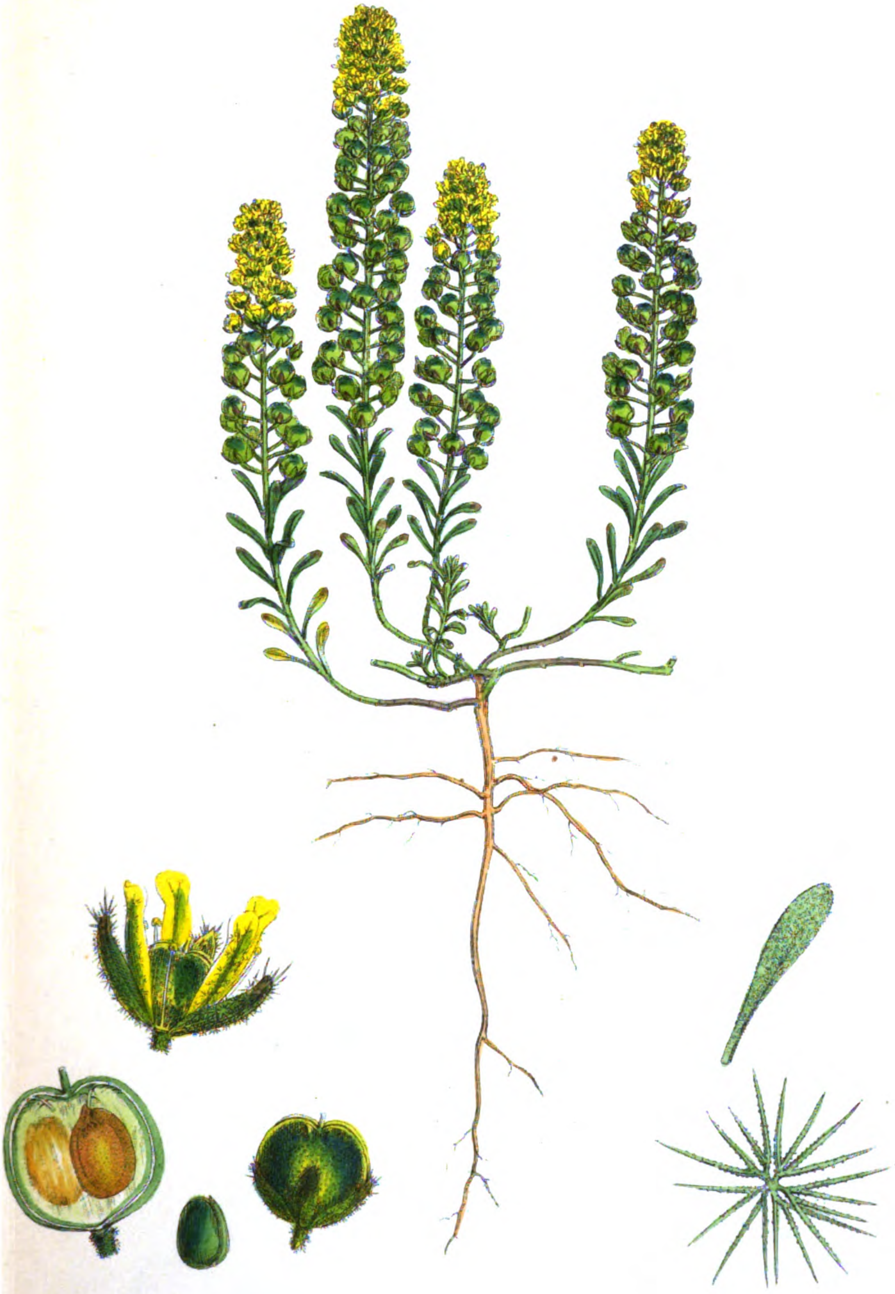
B. 1338.

Draba rupestris. Rock Whitlow-grass.



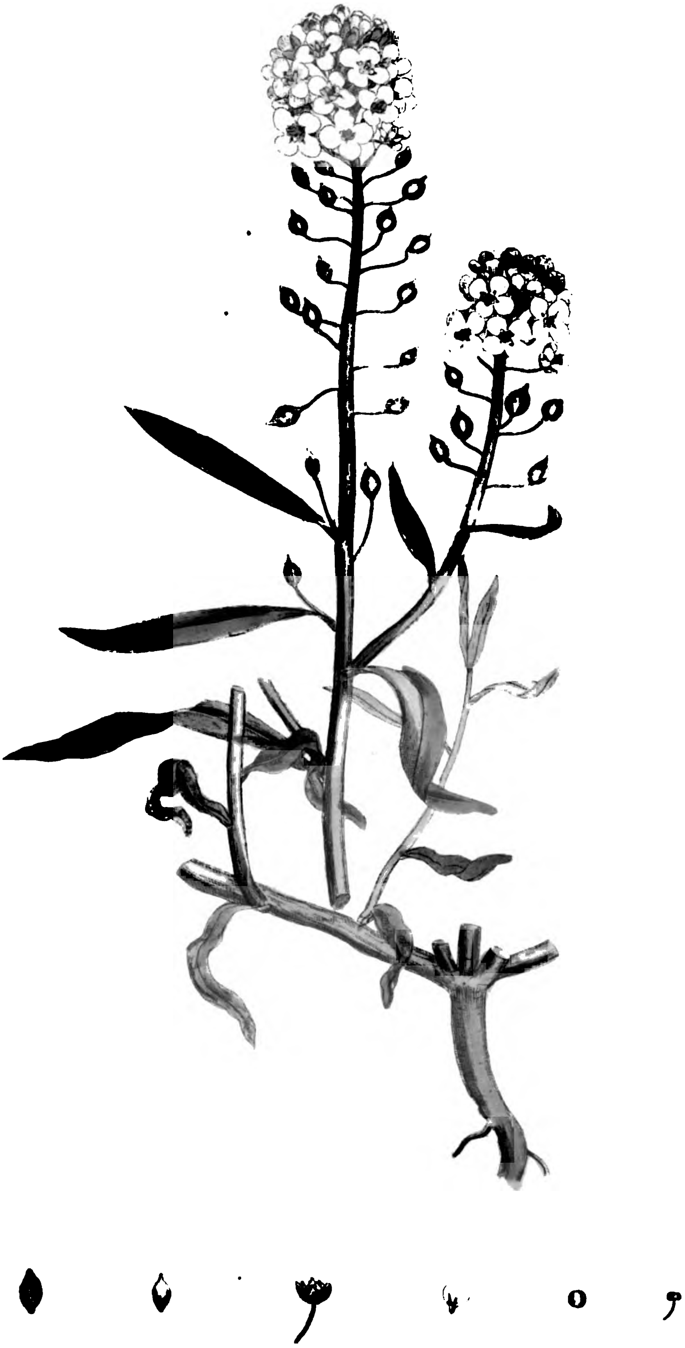
E. B. 1271.

Draba aizoides. Yellow alpine Whitlow-grass.



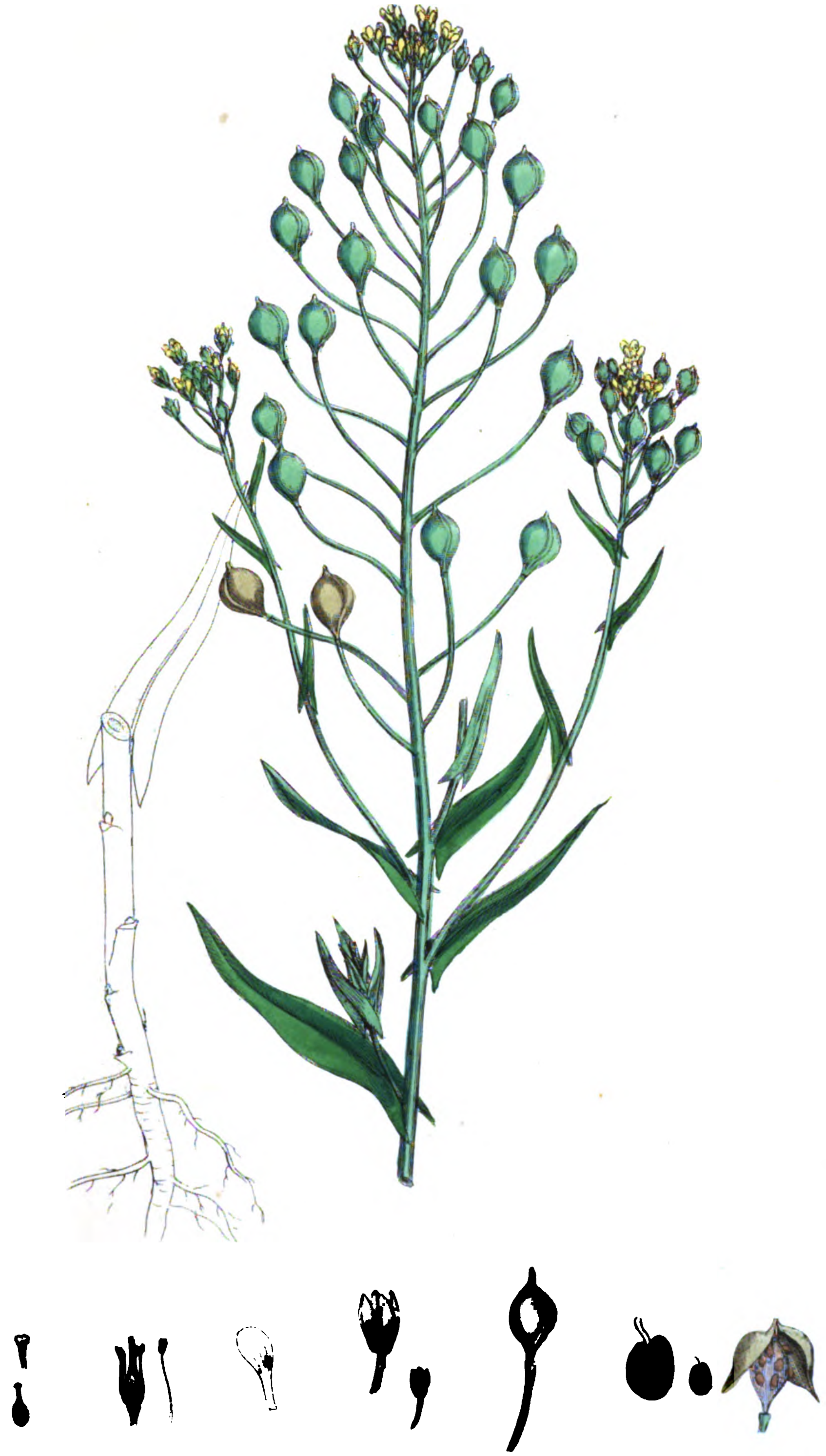
S. 2853.

Alyssum calycinum. Calycine Alyssum.



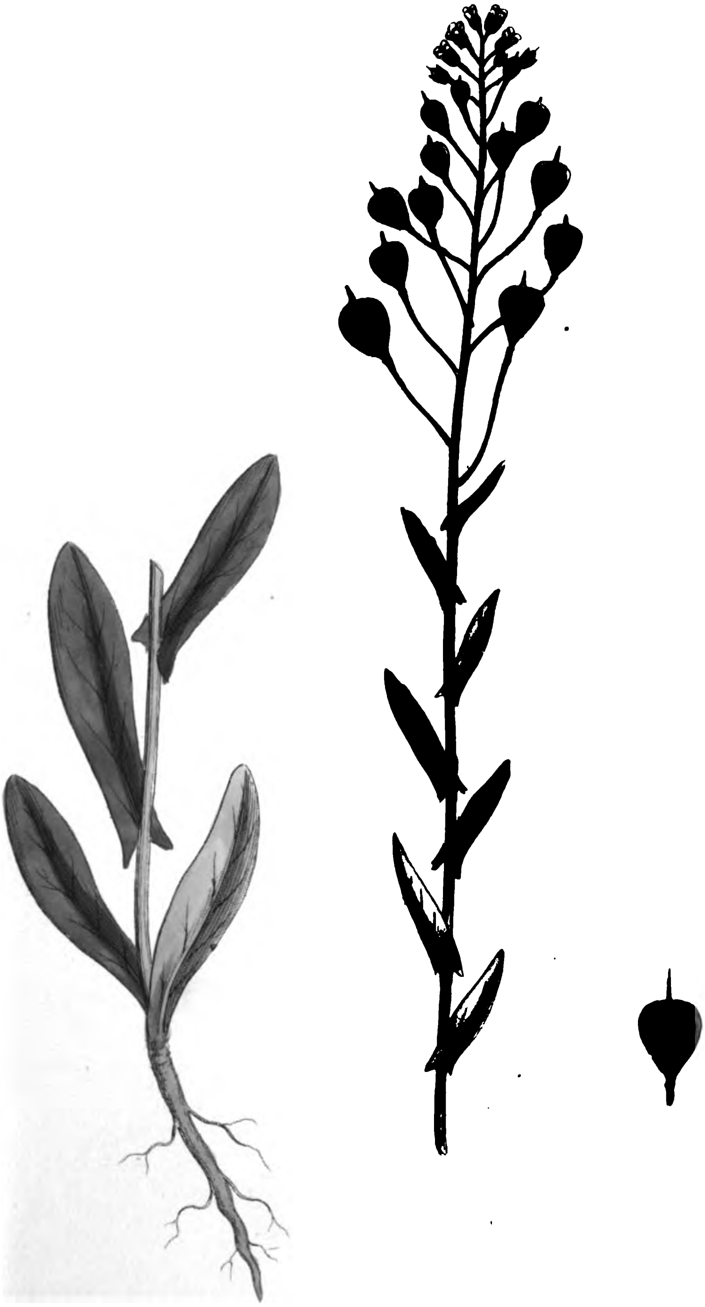
B. 1729.

Alyssum maritimum. Sweet Alyssum.

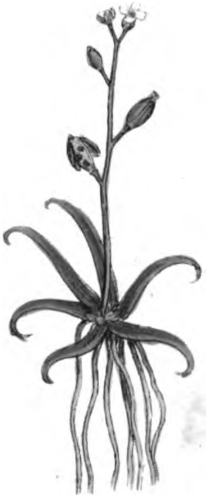


E. B. 1254.

Camelina eu-sativa. Cultivated Gold-of-pleasure.

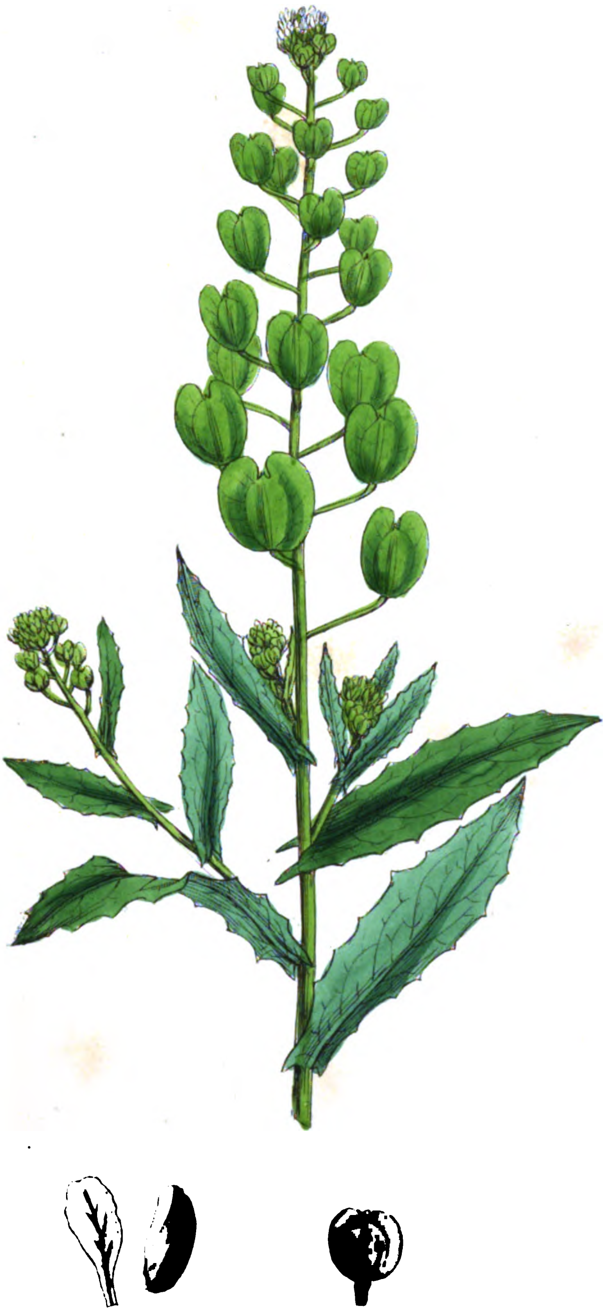


Camelina fœtida. **Fœtid Gold-of-pleasure.**



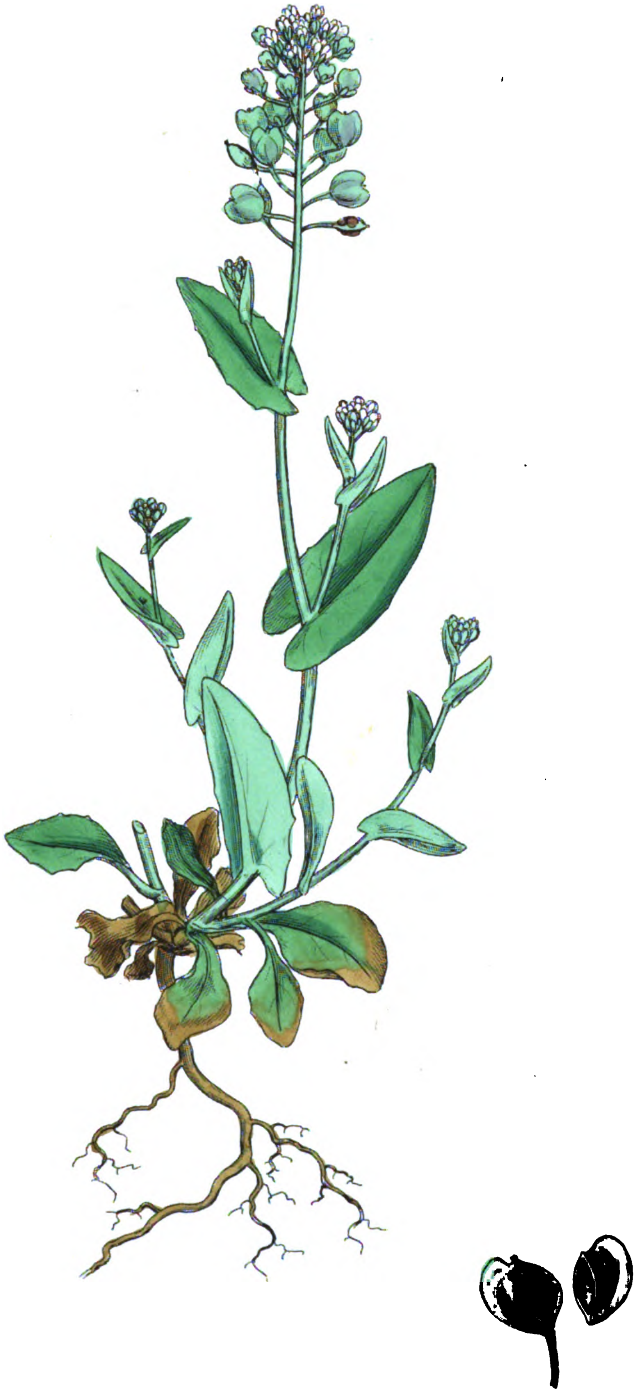
732.

Subularia aquatica. Water Awl-wort.



E. B. 1659.

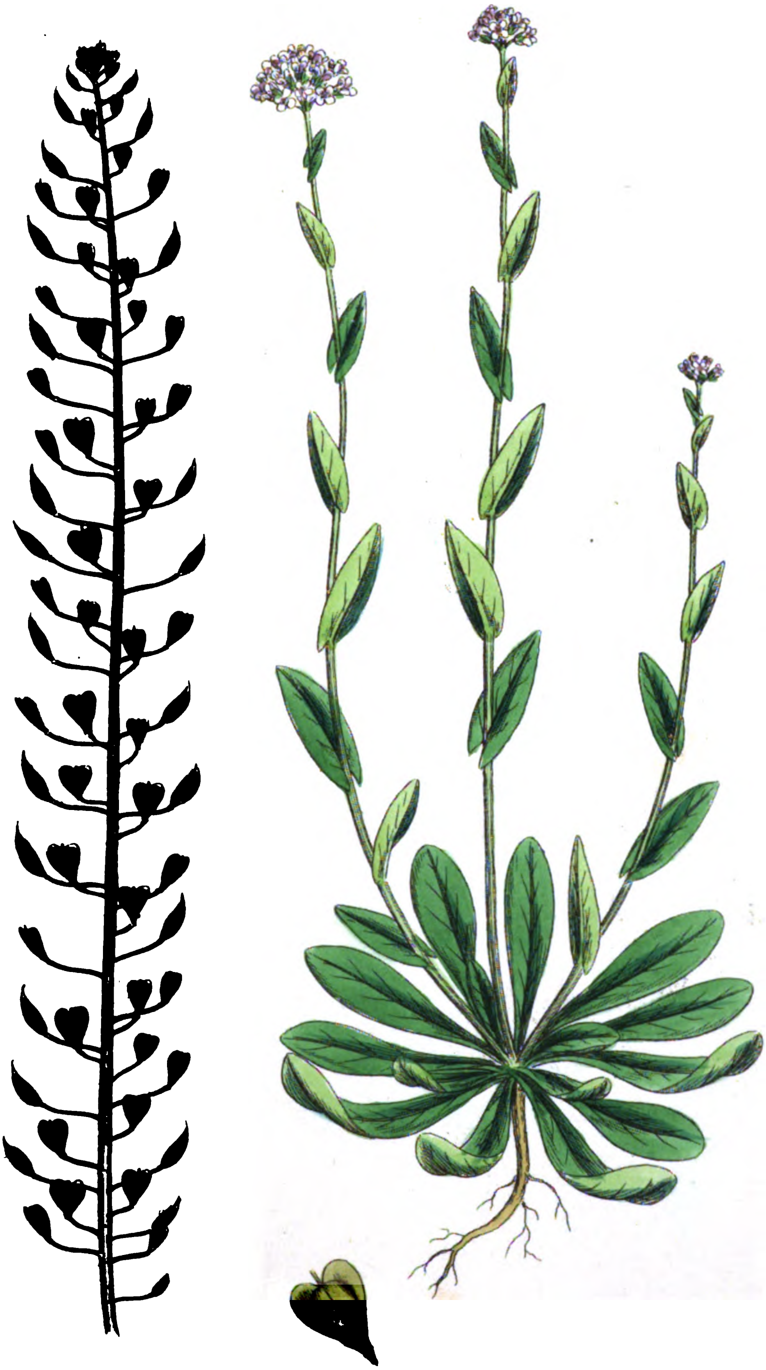
Thlaspi arvense. Field Penny-Cress.



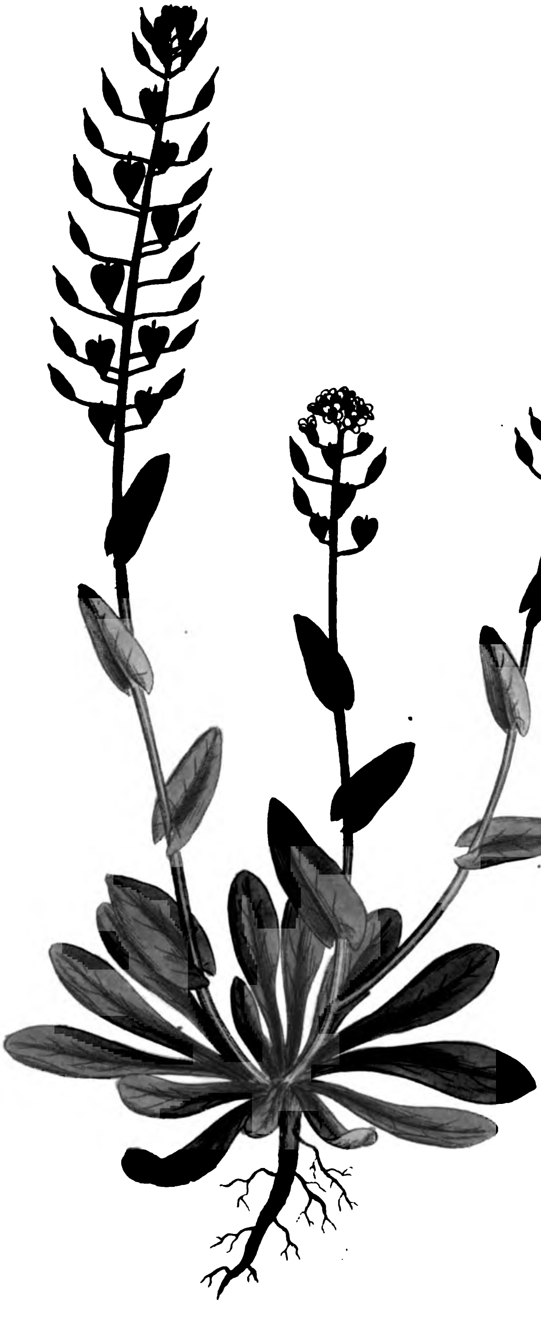
E. B. 2354.

Thlaspi perfoliatum. Perfoliate Penny-Cress.

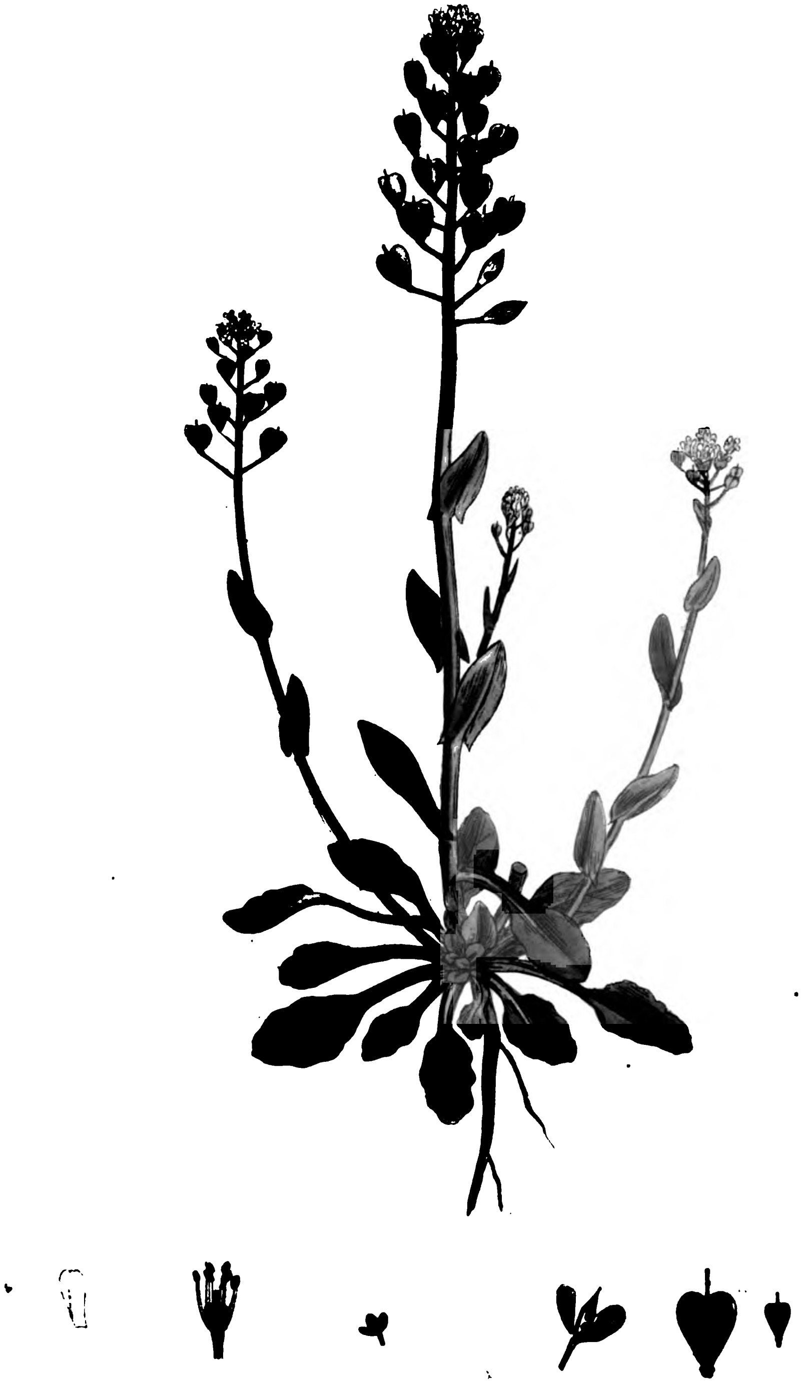
CXLVI.



Thlaspi sylvestre. **Short-styled alpine Penny-Cress.**

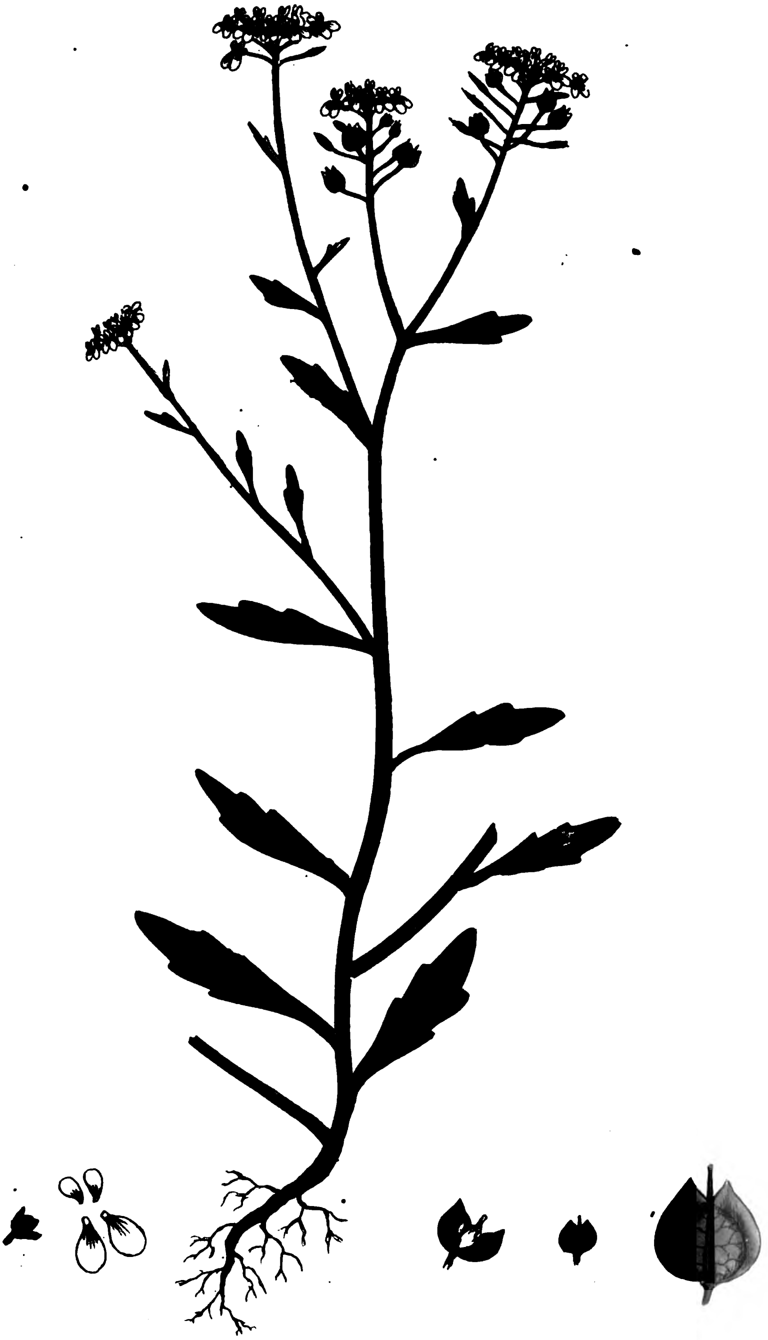


Thlaspi occitanum. Long-styled alpine Penny-Cress.

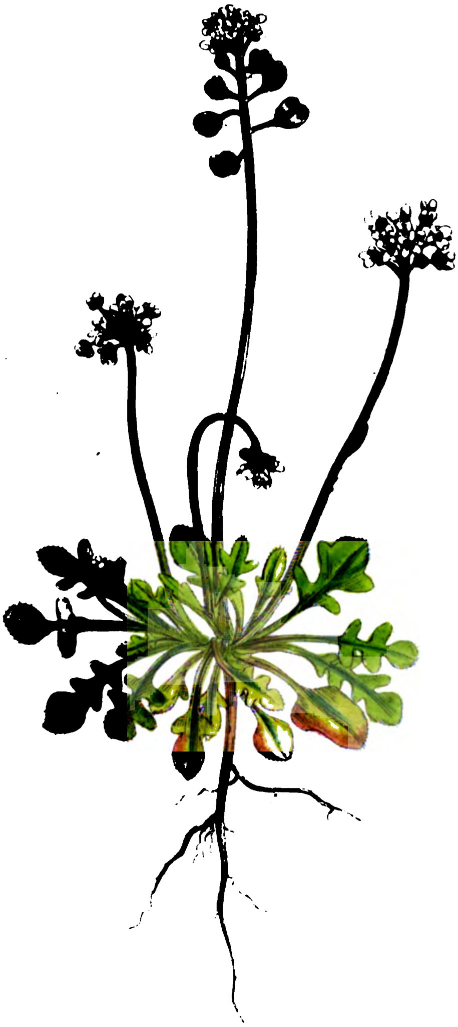


B. 81.

Thlaspi virens. Green alpine Penny-Cress.

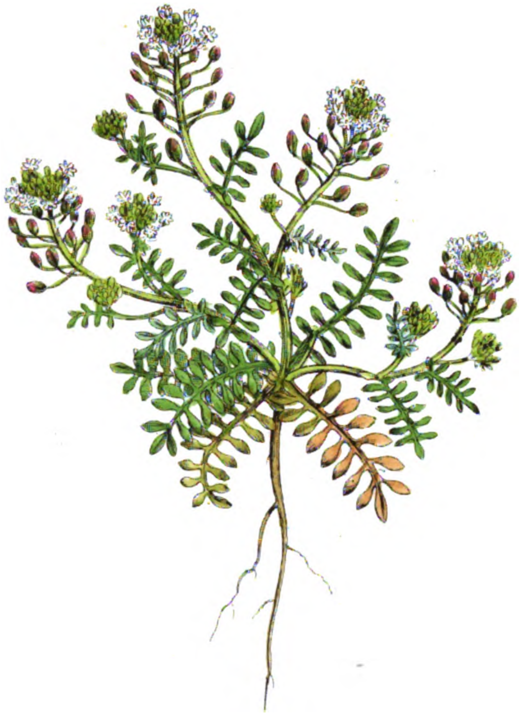


Iberis amara. Bitter Candy tuft.



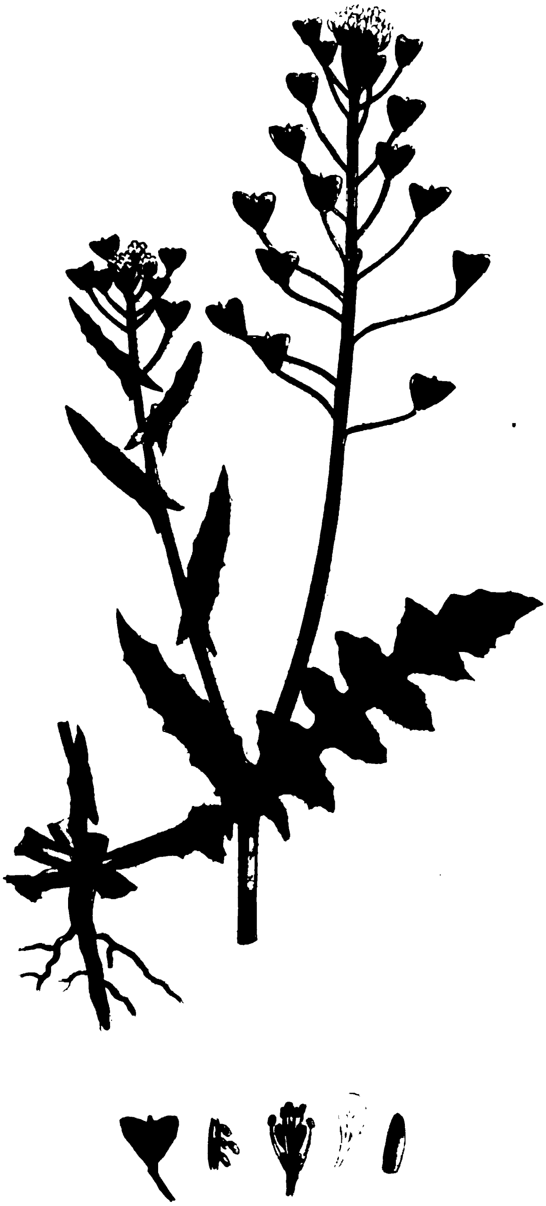
E. B. 327.

Teesdalia nudicaulis. **Naked-stalked Teesdalia.**



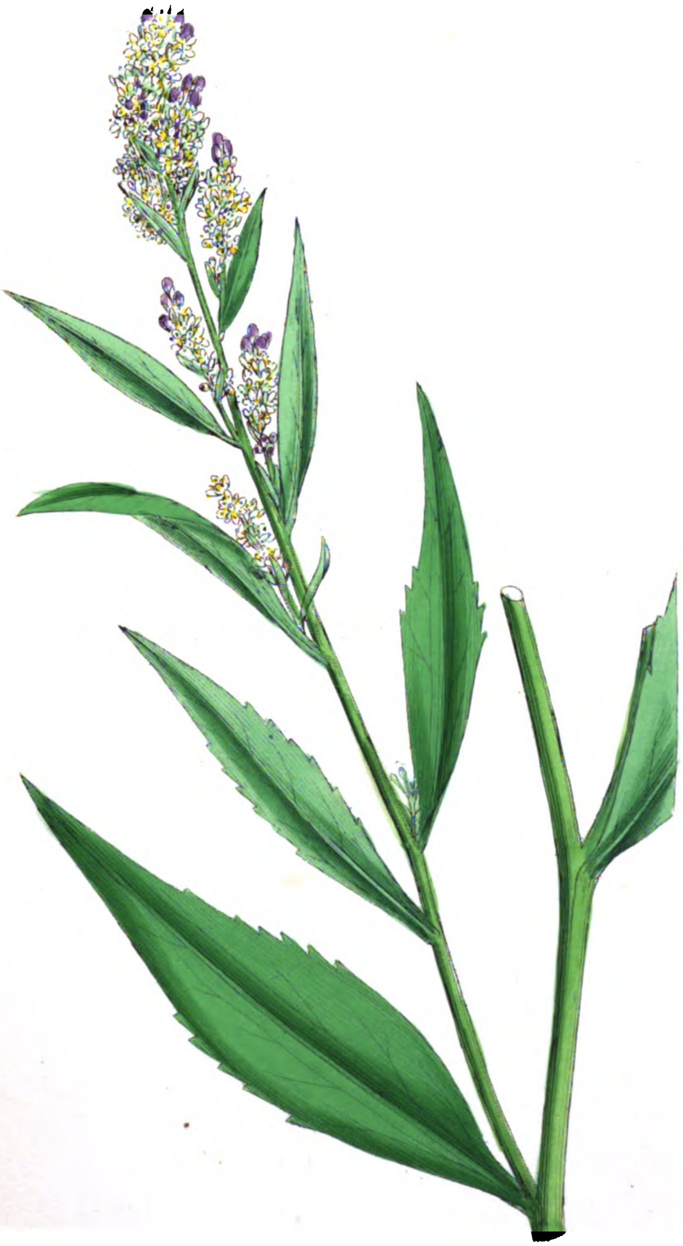
E. B. III.

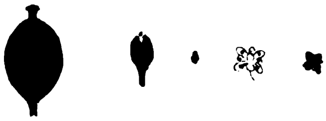
Hutchinsia petræa. **Rock Hutchinsia.**



E. B. 1485.

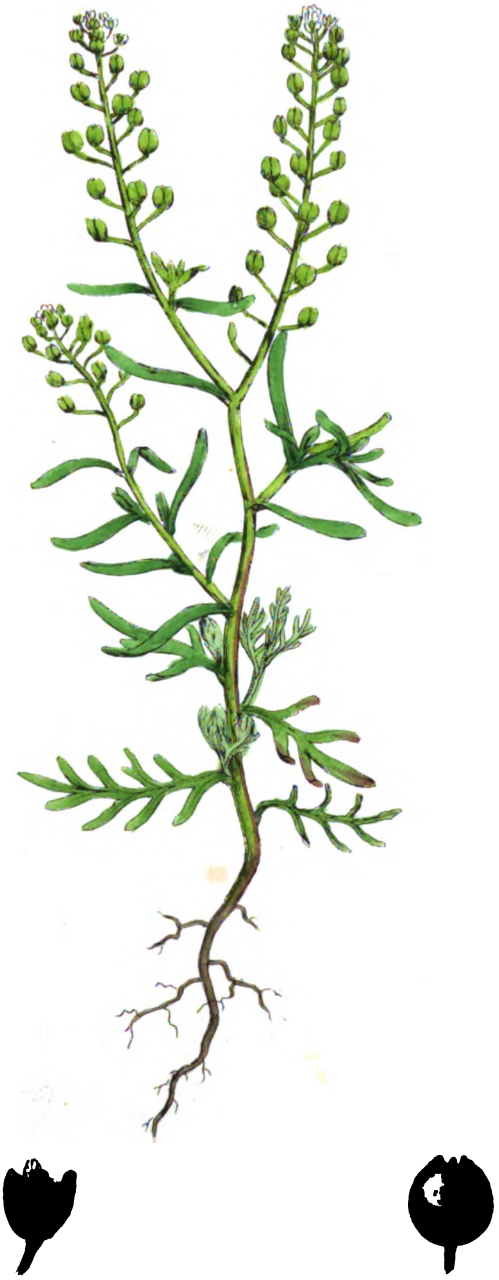
Capsella Bursa-pastoris. Shepherd's Purse.





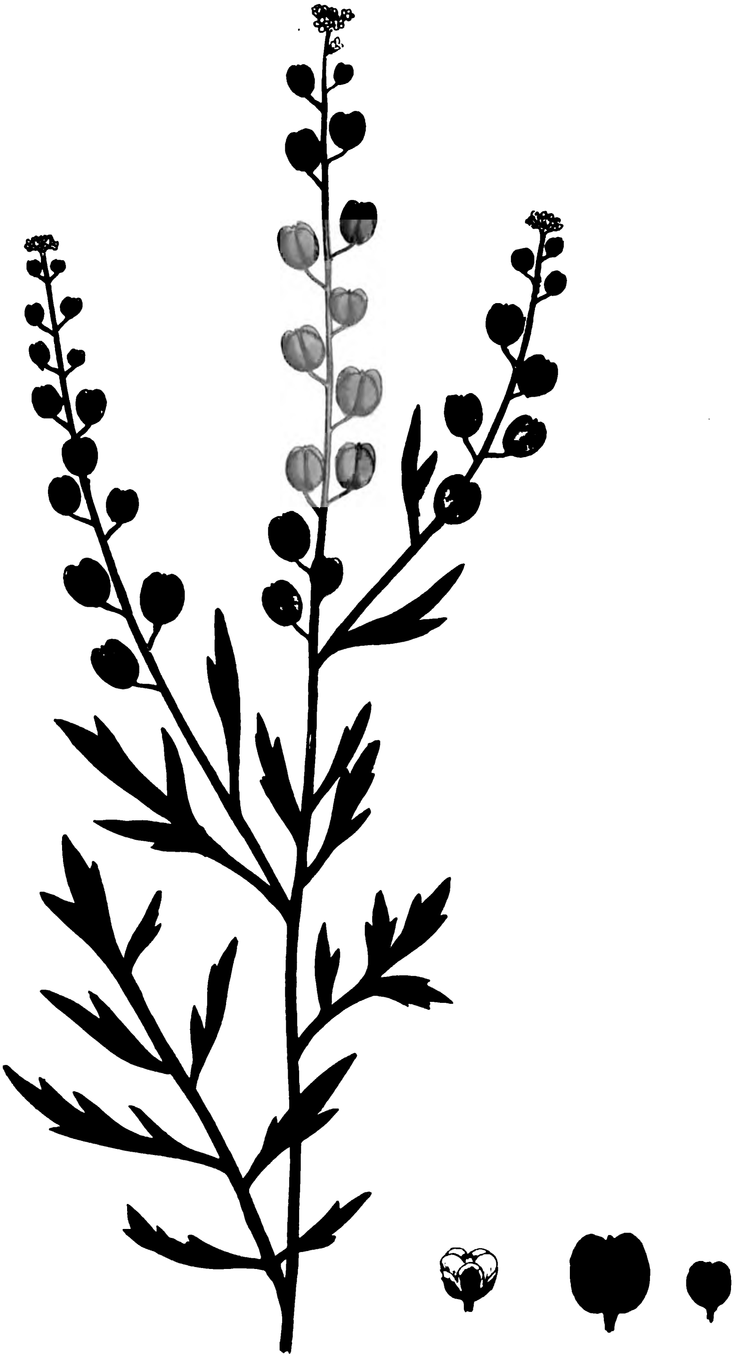
E. B. 182.

Lepidium latifolium. **Broad leaved Pepper-wort.**

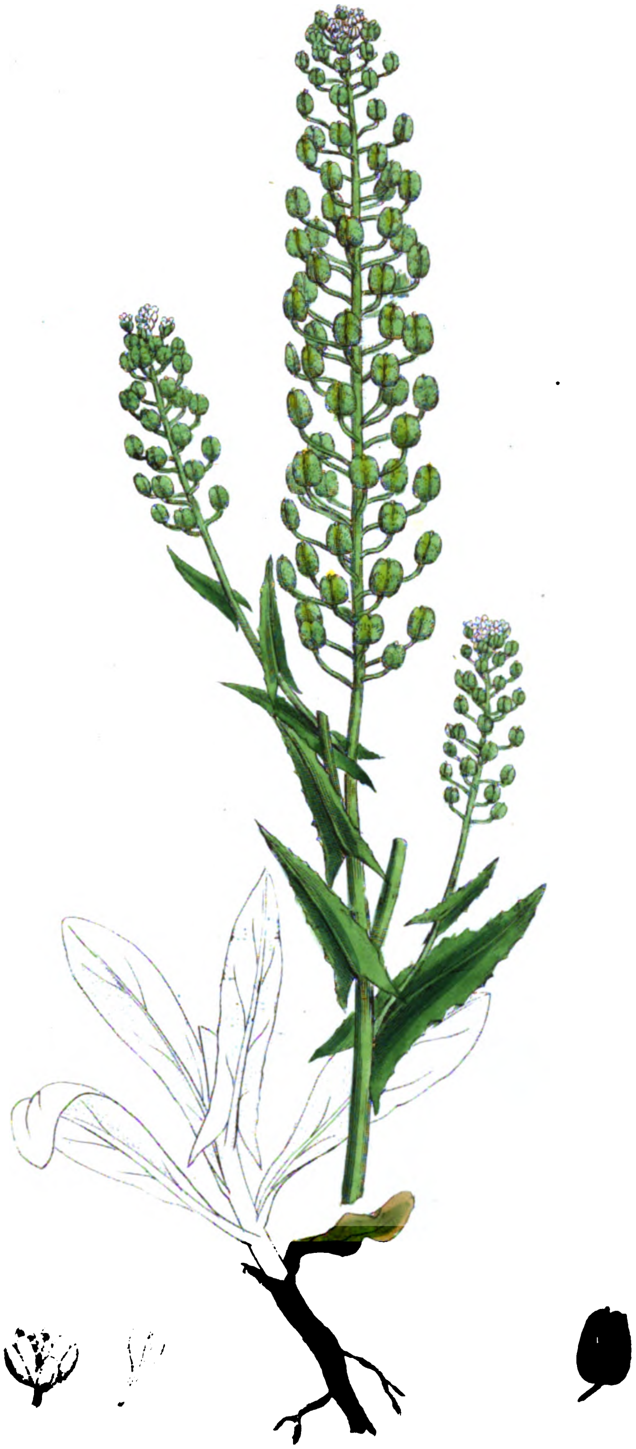


E. B. 1595.

Lepidium rudcrale. Narrow leaved Pepper-wort.



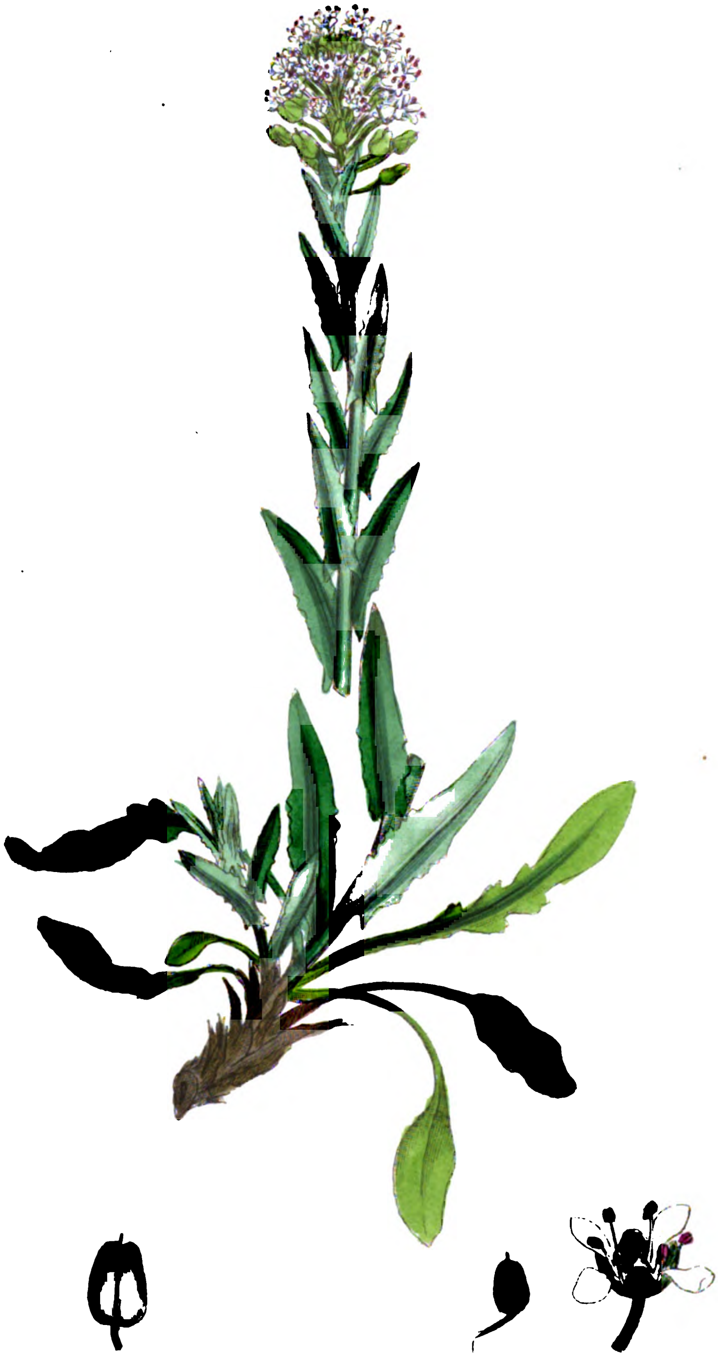
Lepidium sativum. Garden Cress.



E. B. 1385.

Lepidium campestre. **Common Mithridate Pepperwort.**

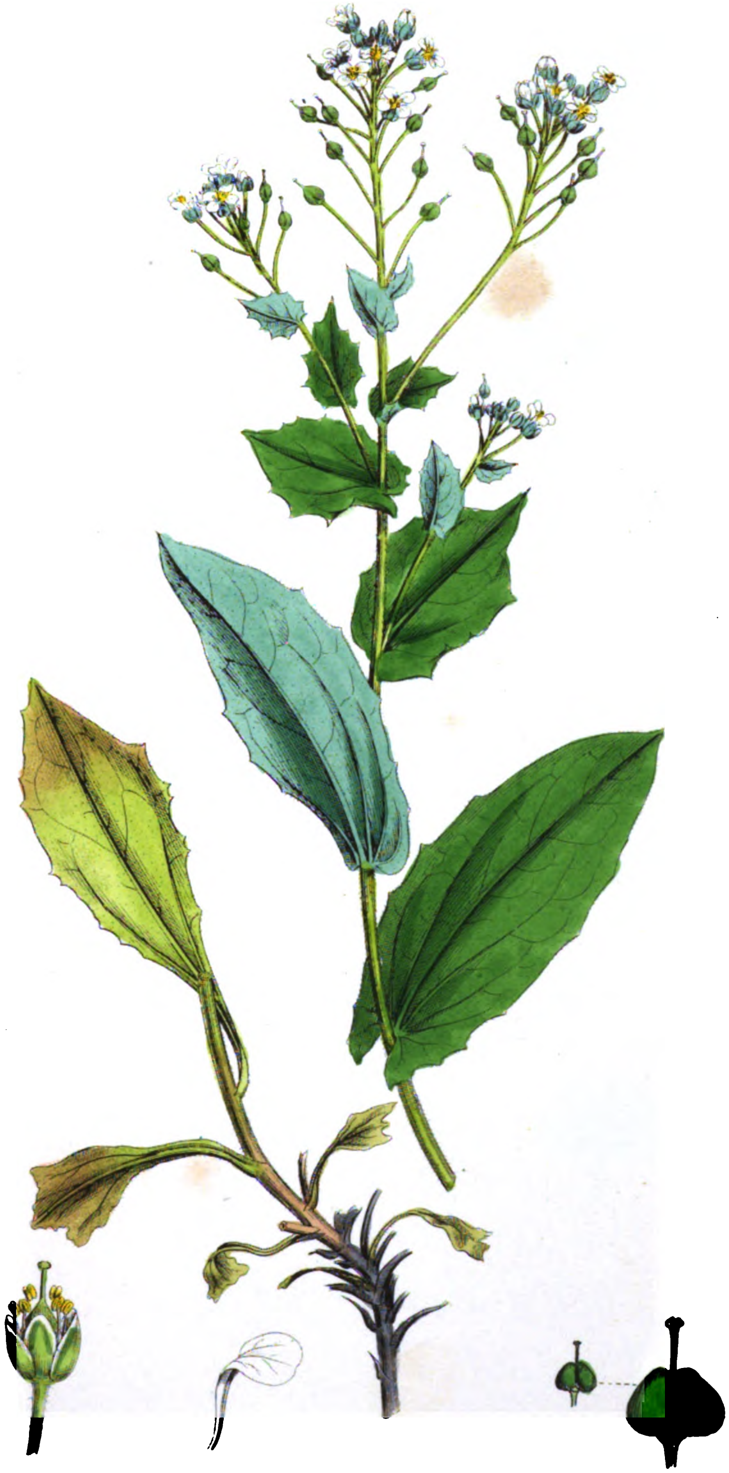
CLVII.



E. B. 1803.

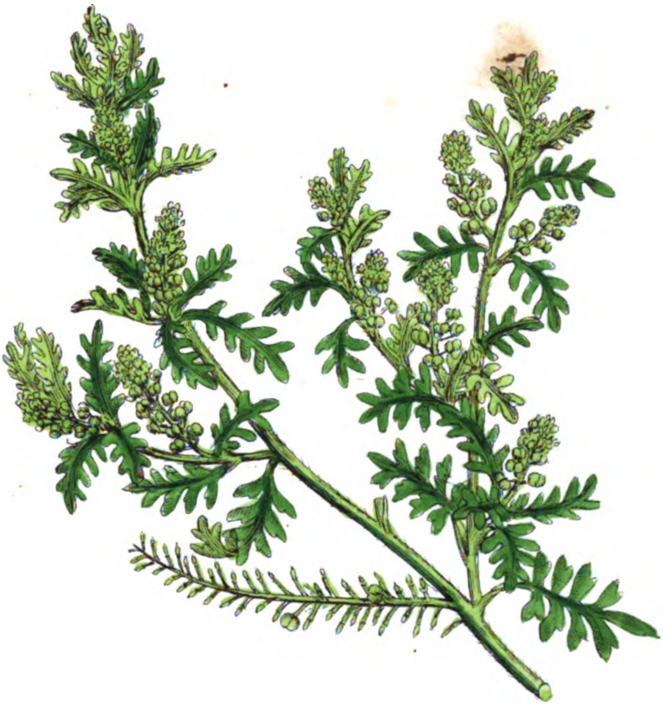
Lepidium Smithii. **Hairy Mithridate Pepperwort.**

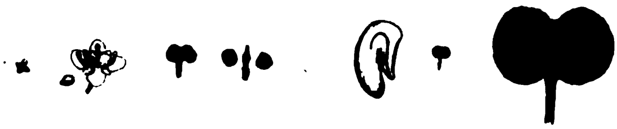
CLVIII.



E. B. . 2683.

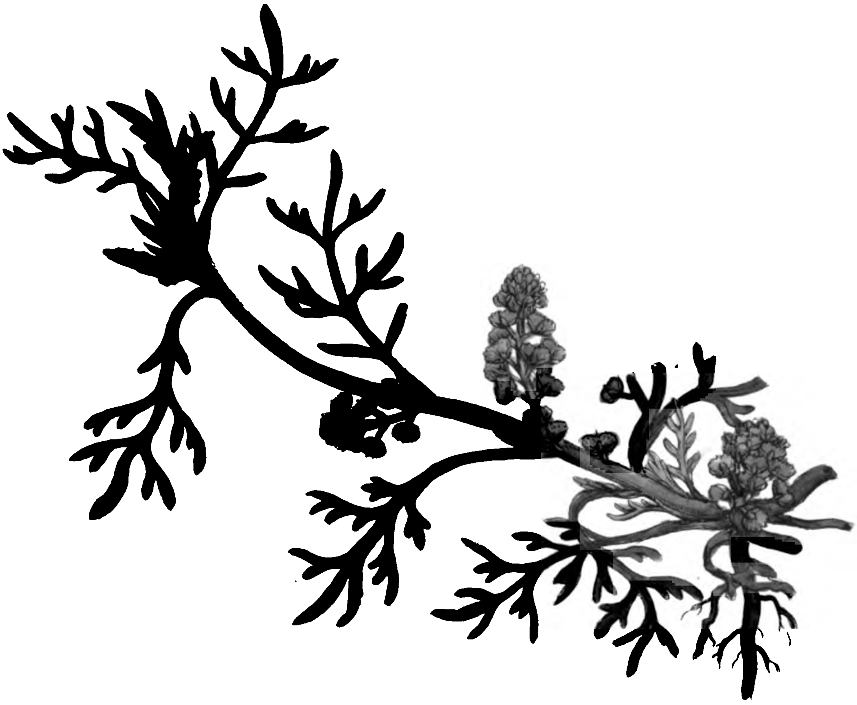
Lepidium Draba. Whitlow Pepperwort.

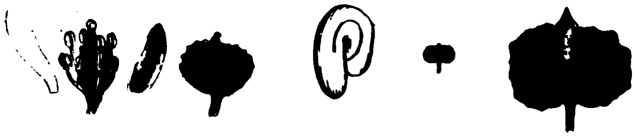




E. B. 248.

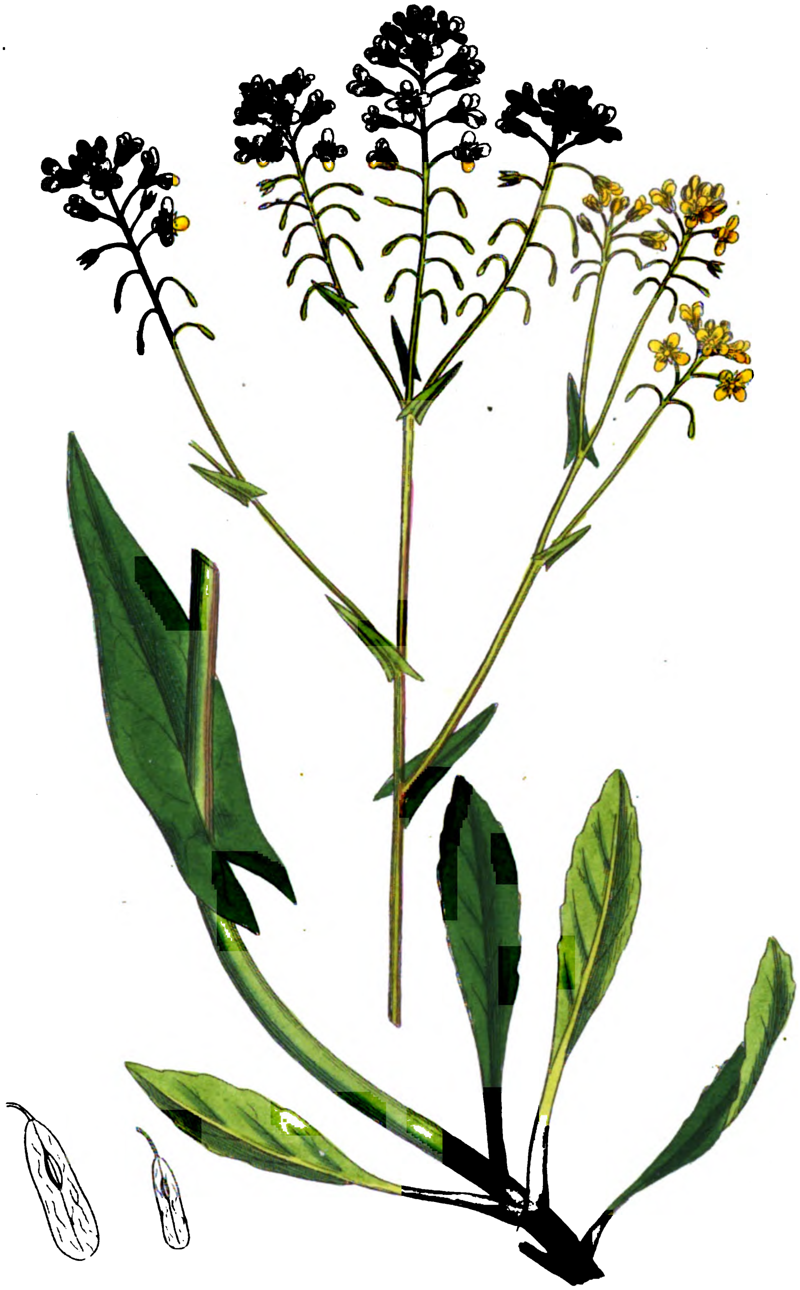
Senebiera didyma. Lesser Swine's-Cress.





E. B. 1660.

Senebiera Coronopus. Common Swine's-Cress.



Isatis tinctoria. Dyer's Woad.